amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 48, No. 10 OCTOBER 1980

FEATURED IN THIS ISSUE:

- ★ HIGH IMPEDANCE BUFFER AND BROADBAND AMPLIFIER FOR DIGITAL FREQUENCY METERS
- ★ WEATHER SATELLITE CONVERTER
- ★ MOBILING THE AMERICAN AND CANADIAN ROCKIES
- ★ Collectors' Corner No. 3 — THE SX200 VHF-UHF SCANNING MONITOR RECEIVER

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Entries will be judged initially by a panel from Dick Smith Electronics to produce five finalists: these will be judged by Neville Williams, MIREE, Editor-in-chief of Electronics Australia magazine.

The winner will be notified by Dick Smith, and will be announced in Electronics Australia and Electronics Today International.

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RULES AND CONDITIONS

Entries will only be accepted on the official entry form, which is available only with the purchase of any item from the Yaesu range from a Dick Smith store or Dick Smith authorised re-seller.

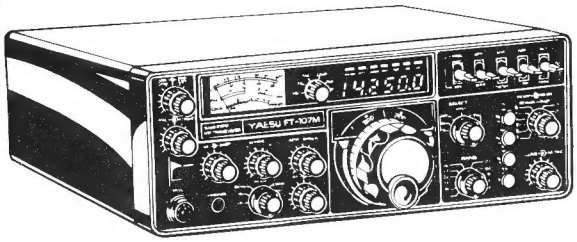
All entries must show the model number and serial number of the item purchased, (if applicable), and be signed by the store manager or authorised person.

In the space on the entry form, write in one paragraph of not more than 50 words.

'The best way that Dick Smith Electronics can promote the fantastic hobby of Amateur Radio to the benefit of Australia'.

Post your entry to: Amateur Radio Contest
Dick Smith Electronics
PO Box 321,
North Ryde NSW 2113.

Entries close at 5pm on Monday, 3rd November, 1980. Entries received after this date will not be considered. Final judging will take place on 10th November, 1980. The judge's decision will be final and no correspondence will be entered into. The winners flight departs from, and returns to Sydney, the winner must travel to Sydney at his/her own expense. All entries become the absolute property of Dick Smith Electronics Pty. Ltd who may use such entries as they see fit.



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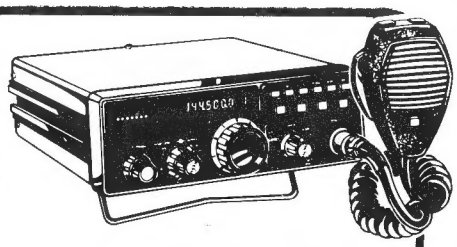

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D3816

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amateur radio

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Material should be sent direct to **P.O. Box 150, Toorak, Vic., 3142,** by the **25th of the second month preceding publication. Phone: (03) 528 5962.** Hamads should be sent direct to the same address by the **1st of the month preceding publication.**

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Cover Photo

With the surge in Amateur activity, particularly on 10m in recent years, many Awards have been established to encourage continued activity independent of solar activity. The 10-10 International Club with over 27,000 members continues to promote 10 metres and Awards such as the City of Melbourne Award (pictured) will not only promote activity, but also friendship.

For details of the City of Melbourne Award and other 10-10 awards turn to page 47.

The Hands-off Meter!

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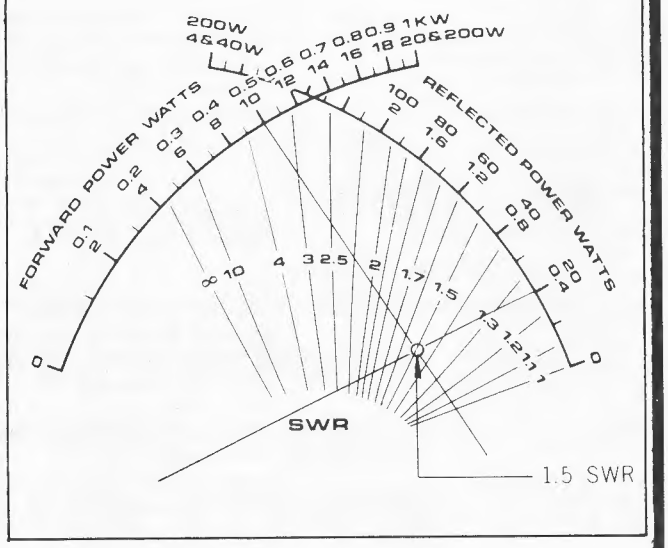

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QSP —

Third Party Conditions for Australian Amateurs

In opening the 1980 Remembrance Day Contest, the Minister for Posts & Telecommunications, Mr. Tony Staley, announced that the prohibition on third party traffic for Australian Amateurs would be removed forthwith.

The Postal & Telecommunications Department has now advised The Wireless Institute of Australia of the conditions that will apply to third party traffic within Australia pending changes to the Wireless Telegraphy Regulations. These conditions are the same conditions as apply in the United States of America. The relevant Federal Communications Commission conditions are:

> *"The transmission or delivery of the following amateur radiocommunication is prohibited:*
>
> *(a) International third party traffic except with countries that have assented thereto.*
>
> *(b) Third party traffic involving material compensation either tangible or intangible, direct or indirect to a third party, a station licensee, a control operator or any other person.*
>
> *(c) Except for an emergency communication as defined in this part, third party traffic consisting of business communication on behalf of any party. For the purpose of this section, business communication shall mean any transmission or communication, the purpose of which is to facilitate the regular business or commercial affairs of any party."*

In essence, these conditions impose three prohibitions. Firstly, there must be no material compensation of any kind to an Amateur or any other person. Secondly, the message must be non-commercial. Thirdly, until Australia enters into the necessary agreements with other countries permitting third party traffic, third party messages can only be passed within Australia.

The Wireless Institute of Australia first sought third party privileges in June, 1977. The conditions imposed by the Department are precisely the conditions that The Wireless Institute of Australia believes should apply.

The Institute has been concerned for a very long time at the effect of third party restrictions on the ability of Amateurs to be prepared for emergencies. The best practice in passing messages is to pass messages. In different States, the prohibition has been interpreted differently and there is no doubt that Amateurs have been inhibited both in practice and in actual emergency situations. For this reason, the Institute welcomes the Minister's announcement and welcomes the nature of the conditions that have been imposed.

It is worth pointing out that certain restrictions are essential. The ITU Radio Regulations define the Amateur Service. The restrictions imposed ensure that there is no inconsistency between that definition and the nature of the Service in Australia. It should also be pointed out that the prohibition against international third party traffic is also to be found in the ITU Radio Regulations, though these Regulations specifically allow Administrations to agree to the exchange of third party traffic by Amateurs between their respective countries.

The right to carry third party traffic within Australia does not include the right for Australian Amateurs to phone-patch. That is an entirely different issue and is certainly prohibited by the Australian Telecommunications Commission.

The Institute has been invited to advise the Postal & Telecommunications Department of the countries to which third party agreements are desired. The Institute is responding to that invitation.

We believe that the Minister's announcement represents a significant deregulation of the Amateur Service in Australia and one that will, in time, result in the enhancement of the communications skills of the Australian Amateur.

MICHAEL J. OWEN VK3KI ■

QSP

THE ERECTION OF TOWERS

In a recent edition of the WIA's Minibulletin there were quoted instances of amateur operators being refused permission to erect a tower, the localities actually being Fairfield and Campbelltown. In one instance the operator defied the Council's rejection of the application and did erect his tower only to be prosecuted and ordered to remove the tower. Incidentally the operator's tower was not as high as many of the neighbouring towers for TV antennae.

"For the guidance of all amateurs who are contemplating the erection of a tower I would like to offer the following advice; having been an alderman I have seen the regulations being applied many times. First and foremost, always make a formal application to the shire or council for the erection of any structure be it a minor addition to the house, an outhouse or even a flag pole; if approval is given then this is the answer to any future criticisms from anyone for any reason. Secondly, consider the safety angles of the tower and the necessity of insurance in case the tower should fall on to another property. Thirdly, and this is the one of which few people are aware, there is easy recourse to a person who has been unjustly treated by his local government authority: the Local Government Appeals Tribunal is readily available to everyone, it is inexpensive to have one's matter dealt with by the Tribunal, legal representation is unnecessary and the Tribunal becomes the council (or shire) and their decision is final and cannot be upset except on a point of law. All councils must have a supply of the forms which are used for application and, by legislation, the council must assist the applicant to complete the form if requested.

Everyone is entitled to the quiet enjoyment of one's own amenity — this is a democratic fundamental. If the enjoyment of this amenity necessitates that a tower should be erected on one's property then, provided it does not constitute a danger to anyone and is not for commercial use, the necessary approval should be forthcoming. If the initial application is rejected by the local authority, the applicant should NOT proceed with the erection of the structure as this will surely invite a losing battle; submit the matter to the Local Government Appeals Tribunal and, provided there are no obvious and serious objections, approval will be given." An article by VK2VRB in Smoke Signals, July 1980. ■

INTRODUCING to Australia by "SUPREME" of New Zealand the "MASTER" Range of Antennas

Supreme have been producing the MASTER range of Antennas, and Antenna systems for New Zealand Amateurs for many years, and now we can offer Australian Amateurs the same Antennas, with the high quality and features that have made them the number one Amateur Antenna in New Zealand.

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Available as two systems: **WM40 System** uses 2 traps, giving dipole operation on 80 and 40m and multiband operation on 20, 15 and 10. **WM20 System** uses two traps, giving dipole operation on 40 and 20m, with multiband operation on 15 and 10. **WM40/20 System** uses 4 traps, giving dipole operation on 80, 40 and 20m and multiband operation on 15 and 10.

Rating: Up to 1 kW PEP. **Weight:** 150g per trap. **SWR:** 1.5 to 1.0 at resonance. **Feedline:** 72 ohm.

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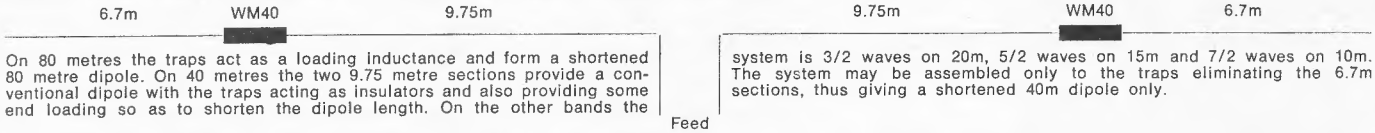
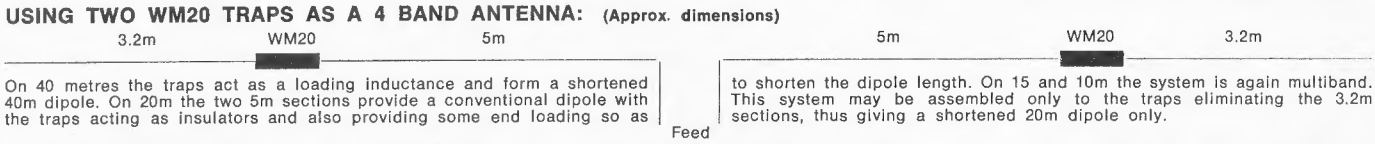
USING TWO WM40 TRAPS AS A 5 BAND ANTENNA: **(Approx. dimensions)**



On 80 metres the traps act as a loading inductance and form a shortened 80 metre dipole. On 40 metres the two 9.75 metre sections provide a conventional dipole with the traps acting as insulators and also providing some end loading so as to shorten the dipole length. On the other bands the system is 3/2 waves on 20m, 5/2 waves on 15m and 7/2 waves on 10m. The system may be assembled only to the traps eliminating the 6.7m sections, thus giving a shortened 40m dipole only.

USING TWO WM20 TRAPS AS A 4 BAND ANTENNA: **(Approx. dimensions)**



On 40 metres the traps act as a loading inductance and form a shortened 40m dipole. On 20m the two 5m sections provide a conventional dipole with the traps acting as insulators and also providing some end loading so as to shorten the dipole length. On 15 and 10m the system is again multiband. This system may be assembled only to the traps eliminating the 3.2m sections, thus giving a shortened 20m dipole only.

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Executive Office: 3/105 Hawthorn Rd., Caulfield North, Vic. 3161. Ph. (03) 528 5962.
Divisional Information (all broadcasts are on Sundays unless otherwise stated).

ACT:
President — Mr. A. Davis VK1DA
Secretary — Mr. F. Robertson-Mudie VK1NAV/ZZZ
Broadcasts— 3570 kHz and 2m Ch. 6 (or 7): 10.00Z.

NSW:
President — Mr. A. D. Tilley VK2BAD
Secretary — Ms. S. J. Brown VK2BSB
Broadcasts— 1825, 3595, 7146 kHz, 28.32, 52.1, 52.525, 144.1, 145.6, 146.4, Rptr. Ch. 3 — Gosford, Ch. 4 — Lismore, Ch. 5 Wollongong, Ch. 8 — Dural 11.00h local (Evening 0930Z). Relays on 160, 80 and 10m, VHF and Reptr. Ch. 3, Ch. 5, Ch. 8, and Hunter Branch, Mondays 0930Z on 3595 kHz, 10m, and Ch. 3 and 6. RTTY Sunday 0030Z 7045, 14090 kHz, Ch. 52, 0930Z 3545 kHz, Ch. 52.

VIC.:
President — Mr. A. R. Noble VK3BBM
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1840, 3600, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (5) repeater: 10.30 local time.
Gen. Mtg. — 2nd Wed., 20.00.

QLD.:
President — Mr. A. J. Aarsse VK4QA
Secretary — Mr. W. L. Gielis VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.
Gen. Mtg. — 3rd Friday.

SA:
President — Mr. I. J. Hunt VK5QX
Secretary — Mr. W. M. Wardrop VK5AWM
Broadcasts— 1820, 3550, 7095, 14175 kHz; 21.160 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday, 19.30.

WA:
President — Mr. B. Hedland Thomas VK6OO
Secretary — Mr. Peter Savage VK6NCP.
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.47, 53.1 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. R. Emmett VK7KK
Secretary — Mr. B. J. Morgan VK7RR
Broadcasts— 7130 (SSB) kHz with relays on 6 and 2m Ch. 2 (S), Ch. 8 (N), Ch. 3 (NW), 09.30 EST.

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VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton.
VK6 — G.P.O. Box N1002, Perth, 6001.
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VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

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VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 46, Canberra, A.C.T. 2600.
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VK3 — Inwards QSL Bureau, Mrs. B. Gray VK3BYK, 1 Amery Street, Ashburton, Vic. 3147.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001.
VK5 — QSL Bureau, Mr. Ray Dobson VK5DI, 16 Howden Road, Fulham, S.A. 5024.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, Mr. N. R. Penfold VK6NE, 388 Huntriss Rd., Woodlands, W.A. 6018.

WIA NEWS

The news about Third Party traffic within Australia should go a long way towards alleviating many of the problem areas associated with emergency traffic and emergency training exercises.

One meeting of the Executive on 13th August discussed a range of on-going and routine matters, including an administrative matter relating to the WIA Superannuation Scheme, the submission made to the Department on the CBRS Review and a revision of the budget for 1981.

In relation to the 1981 budget the Federal Treasurer reported on discussions by the Federal Finance Sub-Committee from which derived a recommendation that because of rising costs, especially in connection with AR, an increase in the Federal dues was prudent if a deficit were to be avoided. This would be despite the exercise of all possible economies. After considerable discussion, a small increase of $1.50 was accepted and passed — this is only a 9 per cent increase in the Federal dues.

Continuing discussions on the future of AR dealt in the main with Divisional Notes and Divisional Inserts. These were matters initiated at the 1980 Federal Convention in an attempt to render the magazine even more interesting for members.

Leaving the JOTA weekend free of contests was agreed as necessary, hence the changed dates for this year's Australian Novice Contest to the 27th-28th September instead.

An interesting item, already referred to Divisions for comments, was a world-wide locator system proposed by the IARU to pinpoint amateurs' QTHs with a reasonable degree of accuracy in as few characters as possible.

And finally, a quote from a note in the mail. "Just as a matter of interest someone has been pirating my husband's call sign for quite a few years now — we received another batch of 'fan mail' the other day. Nice isn't it?" ■

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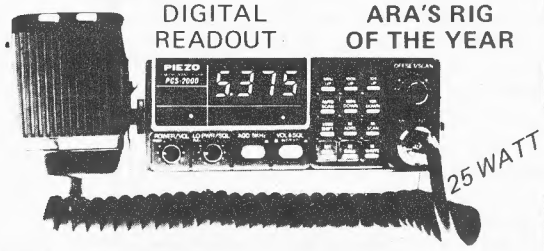

6 CHANNEL MEMORY

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1980 Remembrance Day Contest — Opening Address by The Hon. A. Staley, M.P.

It is with a great deal of pleasure that I received your invitation to open the 1980 WIA Remembrance Day Contest.

Since becoming Minister for Post and Telecommunications I have enjoyed close relations with the Institute. Indeed the aims and ideas of the Institute seem to me to be embodied in the contest itself. The contest is dedicated to the memory of those amateurs who laid down their lives in defence of their country during World War 2. Personally I can think of no better way in which they would have wished to be remembered.

This contest is also renowned for its friendliness and fellowship; in fact I understand it is sometimes referred to as "the friendly contest". The form of the contest not only demonstrates the very high degree of skill that amateurs have achieved but also shows the way in which such skills can be used for their fellow man in times of both national or international emergency.

Here we have a contest founded to commemorate sacrifice — duty — renowned for its friendliness and fellowship, and in its format encouraging the development and refinement of communication skills.

This event not only permits experienced amateurs to demonstrate their expertise but is in reality also an extension for the more inexperienced amateurs of the excellent training offered by the WIA to its members.

Let me take advantage of the opportunity presented in talking at the opening of your 1980 contest to also mention some issues which are currently under discussion between the Institute and the Government.

First, I am very pleased on this occasion to be able to announce that the long-standing prohibition on the use of third party traffic by amateur radio operators will be removed for non-commercial messages.

As you'll be aware the WIA presented their submission for a restricted form of third party traffic in June 1977. Since that time there has been considerable discussion on this matter between my department and the WIA.

There is no reason why this privilege may not be provided forthwith within Australia but before any international traffic can proceed in this way we must await the agreement of the countries concerned. At this stage it would appear likely that only the United States may agree.

My Department will continue to discuss such aspects with the WIA. Certain legislative changes will of course need to be made to the Wireless Telegraphy Regulations. In the meantime the conditions under which third party traffic will be permitted will exclude certain forms of radio communications, mainly involving communications for the purpose of material gain such as advertising. I will take the necessary steps to ensure that all bodies concerned with this change in policy will be advised in writing and that the required legislative changes will be made as soon as possible.

Second, I have agreed to the proposals made by my Department to provide a draft of the post-WARC Australian Radio Frequency Table in consultation with all interested parties, including of course the WIA itself. It is my hope that you will all see a copy of the draft table within the next few months.

I am sure that you are all anxious to begin the contest and I now have much pleasure in declaring the 1980 Remembrance Day Contest open. ■

QSP

1979 VK/ZL CONTEST CORRECTIONS

DELETIONS

VK3BQA from 8 hr CW section.
VK3BQA from 8 hr 20m band winner.
VK3XB from 24 hr 10m band winner.

CORRECTIONS

VK3AJ in 8 hr CW section should read **VK6AJ.**
VK3SF in 8 hr CW section should read **VK4SF.**
XL1BCG in 8 hr. CW section should read **ZL1BCG.**
VK3XB in 24 hr Phone section score should be 190538.
VK3BRM, reverse 10m and 20m 24 hr Phone score.
VK6AJ in 8 hr CW section, not **VK3BQA.**
VK3BQA in 8 hr Phone section, not **VK2BQA.**
ZL1BCG in 8 hr Phone section, not **ZL1BGG.**
ZL2BR with 81748 points in 24 hr CW section wins the 10m band award, not **ZL1ADI.**

ADDITIONS

VK3BRM, 24 hr Phone section, 80m winner.
VK5MS, 24 hr Phone section, 10m winner.
VK5WV 26769 points and **VK5NCB** 43606 points.

Murphy didn't strike, he worked overtime; Hi.
73s Neil VK6NE, VK/ZL Manager WIA. ■

High Impedance Buffer and Broadband Amplifier for Digital Freq. Meters

R. Holland VK2ZZB
388 Rouse St., Tenterfield, NSW 2372

AN ARTICLE FOR THE WELL EQUIPPED AMATEUR

With the introduction of synthesised transceivers employing the heterodyning of several mixer crystals with the VCO output of a PLL system, there has grown the need to measure frequencies at low levels. In the majority of cases, because we are dealing with solid state devices, we have levels that are around the order of 10 dBm or less (1 dBm = 1 mW).

The impedances around such circuits are not very appropriate for measurement with devices of relatively low impedances, particularly when the circuit impedances can range anywhere between 200 and several thousand ohms. Consequently a high gain and a high impedance device is required if we are to obtain any measurements and accurate measurements respectively. I am sure that we are all familiar with the operating principle of a GDO, in the same way, loading of any oscillator will cause a resultant shift in frequency.

These two devices, the RF buffer and the broadband amplifier, were primarily designed for the input to the front end of a frequency meter and prescalar, in particular the EA Digital Frequency Counter. The application was for the measurement of a Yaesu FT-901D transceiver, as some problems were being experienced on the 10m bands.

Those familiar with this transceiver know that the crystals and the VCOs cover a frequency range from 15 MHz-43 MHz or so. The probe and amplifier were used to obtain measurements over this range with not noticeable shift in the final frequency of the transceiver.

THE HIGH IMPEDANCE PROBE

Three requirements should be met by the probe:

(a) High Input Impedance — the probe should be greater than 1M.

(b) Low Input Capacitance — typically less than 10 pF.

(c) Wide Band Width — the device should be useful over several octaves.

A JFET was chosen as the active device to be employed in the input of the buffer. The JFET was followed by a PNP Bipolar transistor — which is used for impedance transformation.

The FET is a process 50 type with a typical gain of 12 dB at 400 MHz and a noise figure of 4 dB at the same frequency. The quoted input capacitance is 3.5 pF with zero gate to source voltage, although at a Vds of 6.0 volts and a Vgs of —4.0 volts this is significantly improved.

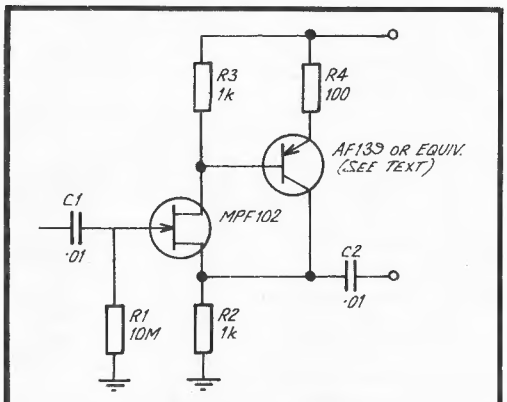

FIG. 1: High impedance buffer.

A typical device of this process is the MPF102 (although I used a 2N254).

The impedance transforming transistor employed in inverted mode was an AF139, which is a PNP germanium transistor — this was used only because of its ready availability in the shack and that it has a high F_T. This device is used in TV masthead amplifiers, so it works within the VHF region.

The design is adapted from National's application notes (AN32).

Layout is not particularly stringent, although good RF practice should be adopted.

The capacitor C1 on the input was included for isolation at high potential and should be a good quality disc ceramic of the appropriate potential desired. C2 may be lowered in value to improve the low frequency response.

THE BROADBAND AMPLIFIER

From National's specifications it can be seen that process 43 transistors have a minimum F_T of 600 MHz and selected devices have F_Ts within the GHz region. The process 43 transistors are employed in UHF amplifiers and oscillators with collector currents in the range of 1-20 mA. Their h_{FE} is between 40 and 200, so I chose a 2N3563 as the active device to be employed in this amplifier.

THE DC BIAS

The DC bias is important, at high currents we achieve greater bandwidth capabilities and better stabilisation of current gain. Looking at the design curve for Constant Gain Bandwidth it was decided to run the transistor with a current of Ic = 10 mA and a voltage of Vce = 7.0 volts as a trade-off in this curve and the supply voltage of 9.0 volts from a No. 216 battery.

Using the following DC network and certain assumptions we will derive the circuit values for the resistors:

(1) $Vc = Vcc - IcRc \quad (IB + IBias << Ic)$

(2) $Vb = \dfrac{R1 + R2}{Vc \cdot R2} \quad (IB + IBias << Ic)$

(3) $Vb = Ve + 0.6 \quad (Vbe = 0.6)$

(4) $Ve = IcRe \quad (Ic = Ie)$.

Choosing Ic = 10 mA and Rc = 100 ohms we arrive at R1 = 3.8k, R2 = 1k and Re = 100.

THE RF CONFIGURATION

To arrive at an RF configuration I will briefly describe two techniques employed by designers. The key to the design problem is the use of RF negative feedback — this is employed to achieve stabilisation, as against oscillation as in the case of positive feedback.

The quoted references in Ham Radio employ some form of series feedback in order to achieve their gain flatness or bandwidth. The results may be a constant voltage gain (which is all to often used for power gain measurements) but has the unfortunate side effect of raising the input impedance of the amplifier by a factor which is proportional to the feedback and the beta of the transistor. Since beta can be approximated by the following expression: $fo = F_T/f$, where f is the operating frequency, then we have an amplifier that achieves higher gain at lower frequencies.

Another method of feedback that could be employed is the shunt feedback. This form lowers the input impedance and the output impedance as well as stabilising the current gain of the device.

The overall ultimate design employs the application of both forms of feedback and the design parameters are included below.

$$\text{Choose } Rf = \frac{Zo}{Re} \quad (Zo = 50 \text{ ohms})$$

$$\text{Gain (dB)} = 10 \log Rf/Re$$

The circuit employs a balun to match the transistor's output impedance without loading it too much. It also covers a wide frequency range. The larger the number of turns the lower will the lower 3 dB point occur and conversely the fewer the number of turns the higher the upper 3 dB point will occur. The final circuit is a combination of the DC and AC networks. For a gain of 19 dB chose Rf/Re = 79,

however Re was chosen as 4.7 ohms giving Rf = 510 as a good compromise between gain and impedance match.

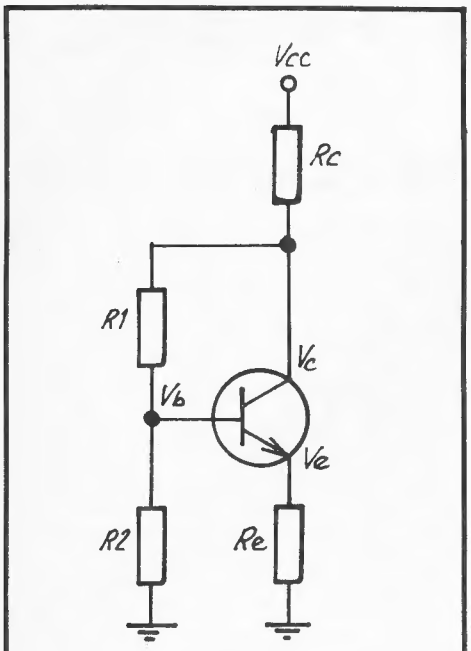

FIG. 2: DC network for preamp.

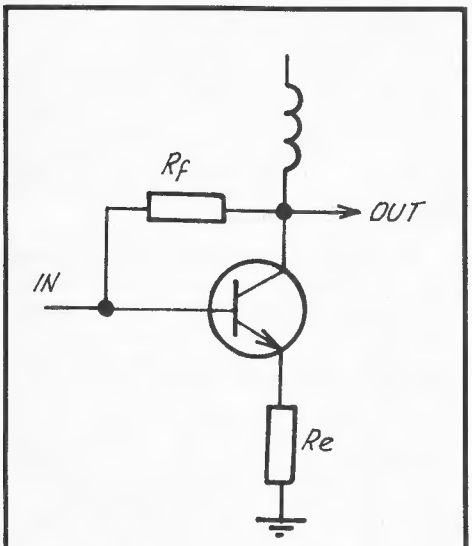

FIG. 3: The AC network for preamp.

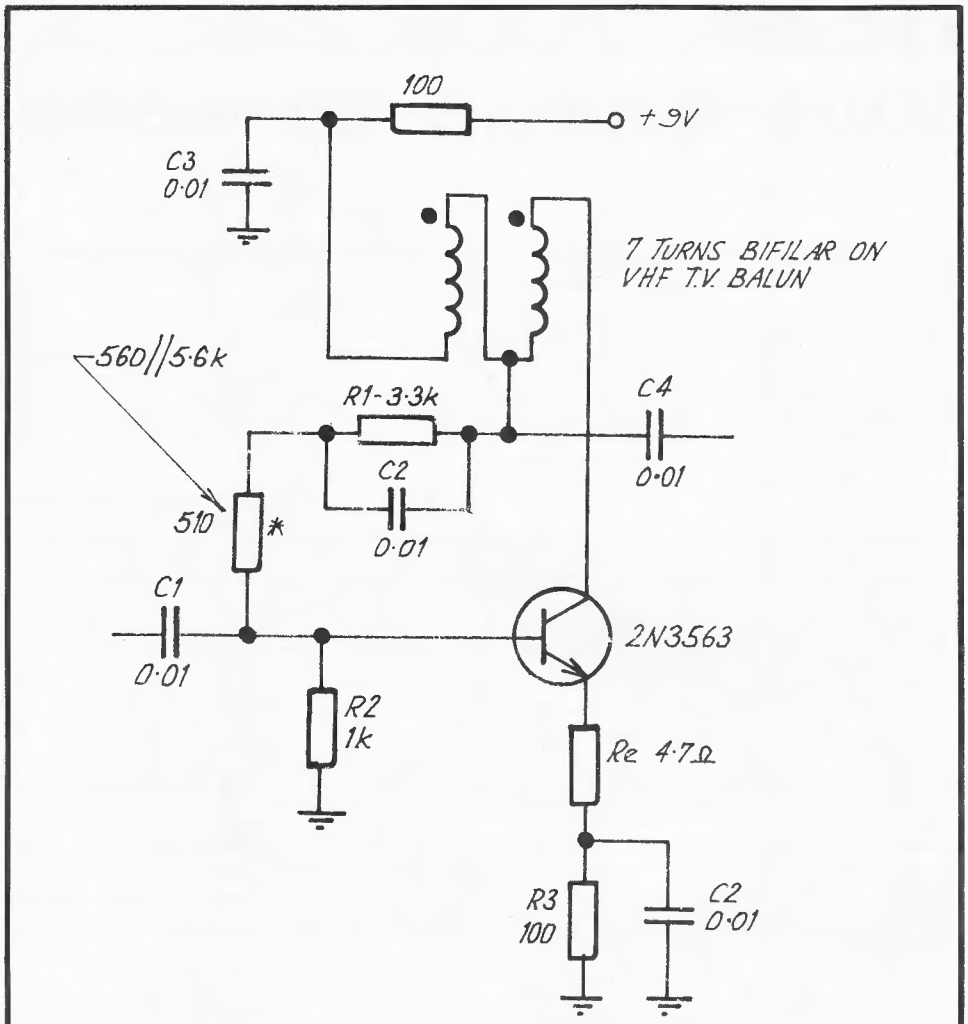

FIG. 4: Completed broadband amp.

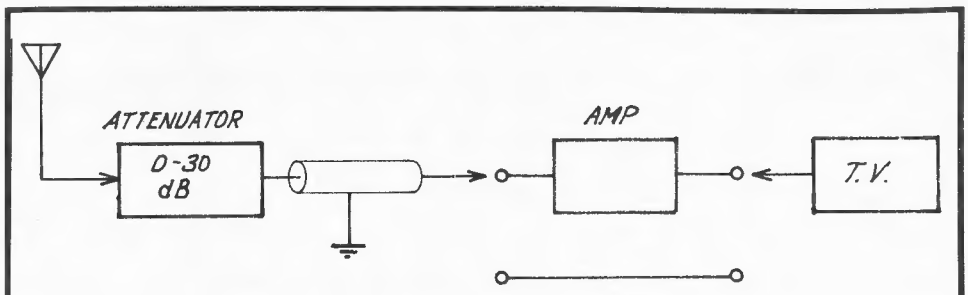

FIG. 5: Schematic of connections of system.

Gain ~ 19 dB
Input ~ 50 ohms
Output ~ 75 ohms
BW ~ 200 kHz — 50 MHz

The performance of this amplifier was measured using a single generator and attenuator driving the amplifier into a resistive load — however at VHF the amplifier was tried out as a preamplifier for a TV set.

Since we live in a fringe area for channel 6 and channel 8, Lismore, I was able to use these signals and a colour TV set to perform the gain measurements in the VHF region. The amplifier was preceded by a step attenuator 0-30 dB and followed by a TV set. The attenuator was adjusted for colour dropout with and without the amplifier present. (All signals were along 75 ohm coax.) This provided a rough estimate of 6 dB gain at 178 MHz and 3 dB gain at 192 MHz.

A special thanks to my father, Rev. Bruce Holland VK2ZAD, for the opportunity to use his reference library and the use of his test equipment.

Thanks also to Nathan VK2DDT for providing me with the original initiative to build the probe and amplifier.

REFERENCES

1. Wideband IF Autotransformer, John J. Nagle K4KJ, Ham Radio, November 1976, page 10.
2. Wideband Preamp, Ed Pacyna W1AAZ, Ham Radio, October 1976, page 61.
3. General Purpose Wideband RF Amp, Randall Rhea WB4KSS, Ham Radio, April 1975, page 58.
4. Linear Application Notes, NS National Volume 1 AN32, page 7.
5. Transistors Small Signal Field Effect Power, National.
6. Solid State Design for the Radio Amateur, ARRL 1977.

■

DCDF
(Dirt Cheap Direction Finding)

Say "DIRECTION FINDING" to most people and they immediately envision vans full of sophisticated electronic equipment with neat continuously rotating antennas and other "beep-beep" or "ding-ding" systems. Even we highly trained and well-educated amateur radio operators tend to slide off into such day-dreams. But direction finding does not have to be terribly sophisticated to be very effective. Remember, all the DF system is supposed to do is give the operator a fairly accurate indication of which direction a received signal is coming from. How accurate that indication must be is determined more by how versatile the operator is than by the circumstances in most cases. And, of course, cost is inversely proportional to sophistication. So let's get inverse and see how to do the job at lowest possible cost!

First, let's consider the elements of direction finding. The most common approach is to turn a directional antenna until the incoming signal gives the strongest indication of signal strength on some form of signal strength meter. This will give good definition of direction as long as the signal source is far enough away that the signal strength (S) meter is not pegged. For closer signals, the direction definition in terms of beam width gets too wide to be useful. (See Fig. 1.) Rather than move farther from the signal to reduce the signal levy (we're trying to find it, remember?), let's fool the receiver S meter by attenuating the signal electronically. This results in the apparent lobe shown by dotted lines in Fig. 1. So we can now move even closer to the signal by just continuing to attenuate the signal until we are right on top of it! (Note: Some exaggeration exists in the last statement.) But the problem is . . . how to do all this inexpensively!

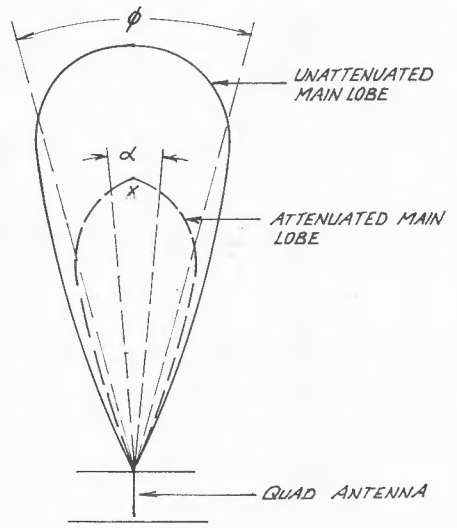

FIG. 1: DF lobe sharpening by attenuation.

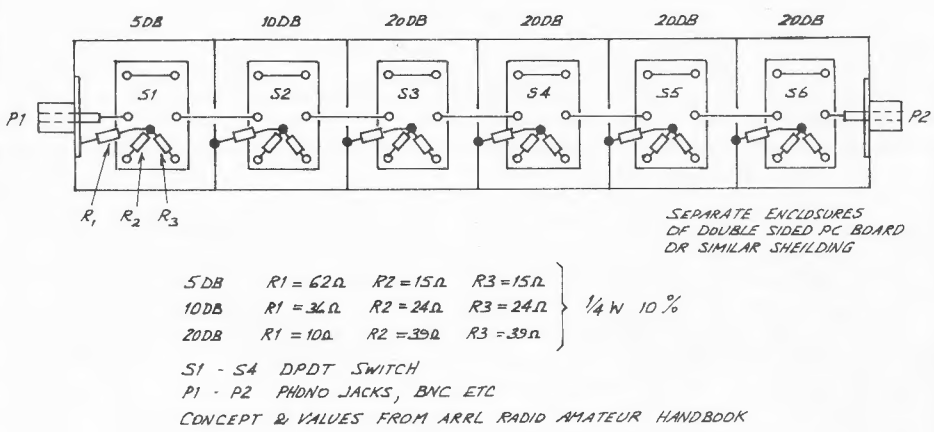

FIGURE 2: RF gain control equipment modifications.

Let's start by figuring out how to attenuate the signal. Fig. 2 shows an inexpensive home-built attenuator which will provide a rather wide range of reduction capability. It has the advantage of not requiring any modification of the receiver being used for the DF system. It has the disadvantage of precluding use of the transmitter portion of a transceiver without disconnecting the antenna and attenuator each time. It also means another piece of equipment to carry along. However cost should not be a problem!

Another approach to the attenuation requirement is to attenuate the signal within the receiver itself. Before you faint, read on, 'cause it "aint't that bad"! The addition of a small 5000 ohm linear tape potentiometer in the RF section of your receiver will allow you to directly adjust the gain of the RF amplifier, and consequently the apparent signal strength of the incoming signal. This is most simply done by reducing the "B+" voltage applied to the RF stage(s). Specific connection points for several popular transceivers are given in Fig. 3. A quick look at the schematic diagram for your receiver should let you find the equivalent points in your receiver. By using some of those cute tiny new potentiometers, with the sexy little knobs, you can actually make the modification improve the looks of your rig, too! And that would be a real change for me!!!

In anticipation of the comment now made by one of our highly technical members, I will provide appropriate answer. Yes, it will tend to distort the incoming signal to drop the "B+" on the RF stage in an amplitude sense. But isn't FM wonderful!

All this time we have assumed that we had a perfectly good directional antenna giving us all those beautiful directional signals. Now we have to figure out how to build one of those for less than a fortunte.

The simplest directional antenna is the legendary DF LOOP. That is a fine directional antenna except that it is bi-directional! So it gives only a line on which the signal source will lie, not the final direction. Why did you think the DF vans continuously rotate their DF loops?

So let's try to find another antenna with good directional characteristics and without the ambiguity of the DF loop. The cubical quad comes to mind almost instantly since it is nothing more than our DF loop with a reflector added to eliminate the other side of the world. And it works very well! Front-to-back ratios of 20 to 25 dB are not at all unusual. It also has a very well defined main lobe so the attenuator technique previously suggested works like a champ! The quad also lends itself very well to minimum cost construction as Fig. 4 demonstrates. Anyone who spends more than $15 for the materials should find another lumber yard and hardware store!

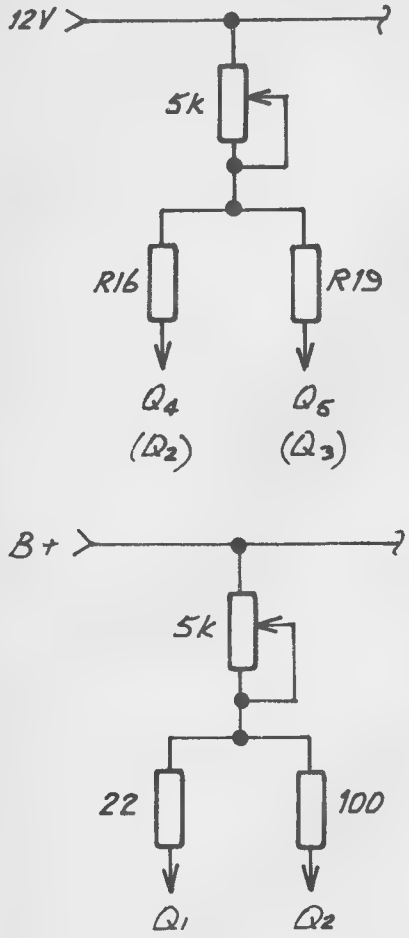

FIG. 3A: The ICOM IC22A/22S before and after modification.

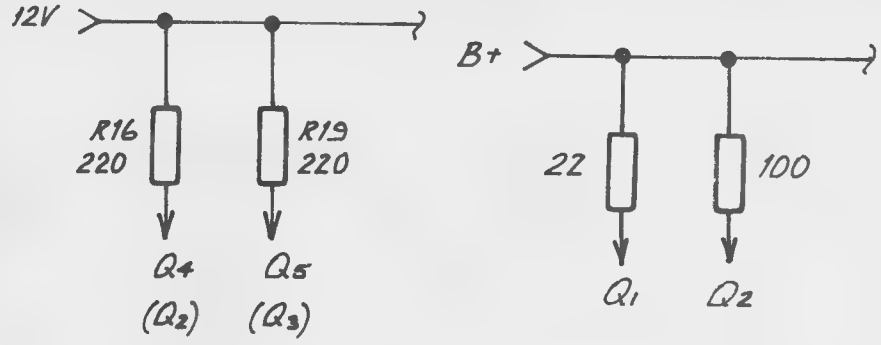

FIG. 3B: The Ken KP202 before and after modification.

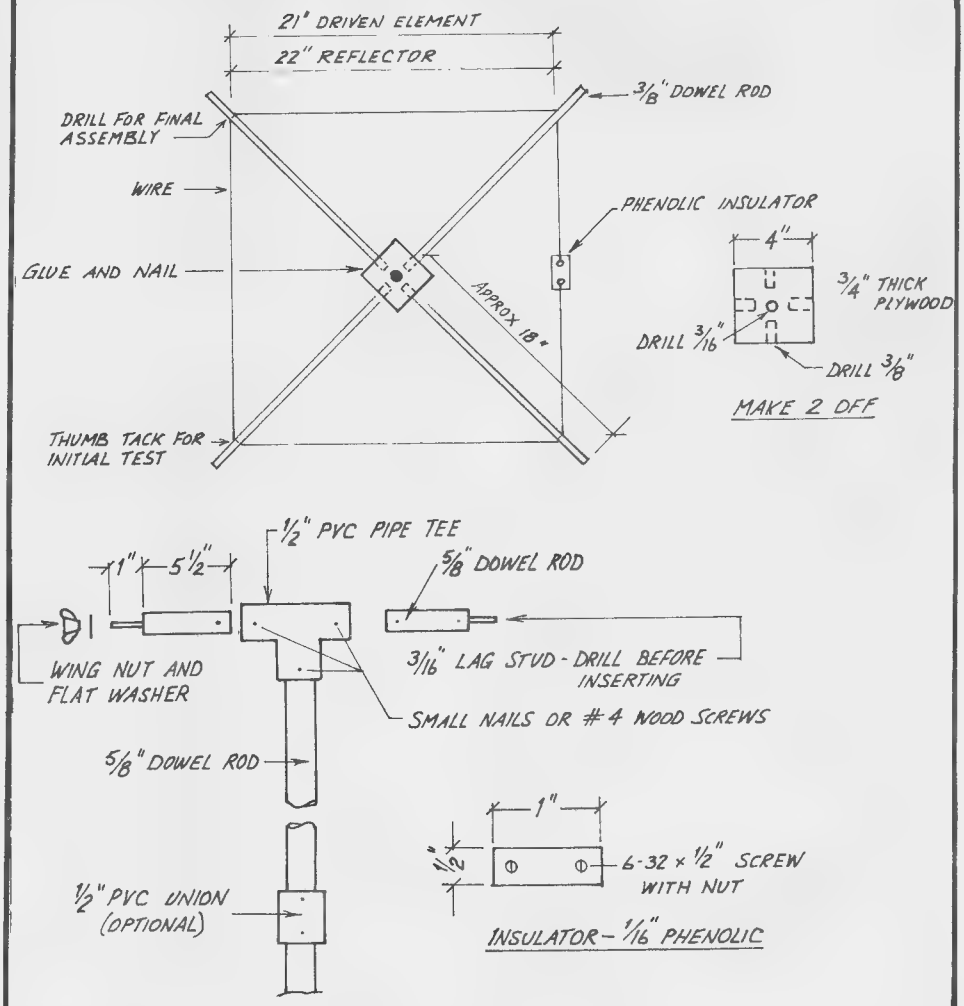

FIGURE 4: DF quad details.

Mounting the antenna on your means of transportation is left to the ingenuity of the builder. One simple method used a single roof-top carrier section. A 2 x 4 length was clamped/tied/nailed to the cross-member and a 5/8 in. hole drilled to accept the 5/8 in. mast of the quad. This turned out to be force-fit and quite adequately damped the rotation of the antenna while moving from position to position. The support was also adequate to keep the antenna from departing the vehicle for all reasonable speeds (legal).

One more technical note — a phenolic block is not required in the reflector loop and tuning of the loops is unnecessary if the dimensions are met reasonably close.

Lest I be given more credit than is my due, I would like to identify the real sources of the information contained in this article. The development of the antenna and the atteuation scheme was done in San Antonio, TX by K5GJN and WB5SXG (now of Oklahoma City). Good luck and good hunting.

Don Graham WA5TAW.

MATERIALS

4 — 3 ft. x 5/8 in. dowel rods.
10 RL — 3 ft. x 5/8 in. dowel rods.
2 — 4 in. x 4 in. x ¾ in. plates.
1 — ½ in. ID PVC pipe tee.
2 — 3/16 in. lag studs.
2 — 3/16 in. wing nuts.
2 — 3/16 in. flat washers.
1 — ½ in. ID PVC pipe union (if extra mast if needed).
1 — Small phenolic piece.
2 — 6-32 x ½ in. screws w/nuts.
8 ft. of No. 178 AWG (or larger) stranded wire. ■

Weather Satellite Converter

John E. Dunkley VK5JE
9 Elva Ave., Pooraka, SA 5095.

Few communication experiences can equal the excitement of seeing a picture being printed in real time from an orbiting satellite within range of one's home station. A converter for the reception of polar-orbiting weather satellite transmissions in the 135-138 MHz band is described. Dual-gate protected field-effect transistors providing good noise figure and stability, followed by an integrated circuit gain-block form the basis of the unit.

(Although this article is not strictly related to amateur radio as such, building the converter will give the constructor good practice and experience in building VHF FM equipment.)

Weather satellites have been around for some years now, commencing with an experimental version launched in 1963 gaining public awareness, and coming of age with the highly successful ESSA series, through to the current generation known as the TIROS-N series.

Technology has now advanced to the stage where the current series of weather satellites provide very high resolution and low APT (Automatic Picture Transmission) resolution photographs both day and night using visible and infra-red (IR) information covering several spectral bands.

Constructional articles for the reception of pictures from weather satellites have appeared in several overseas magazines dating back to 1965. The introduction of latest generation weather satellites (TIROS-N series) has necessitated some changes from earlier practices. The unit now described is the front-end converter currently being used for regular reception and printout of real-time weather pictures.

Signal from the antenna — via a FET pre-amplifier — is coupled into T1 of the converter via L1, and with L2 provides amplification of the input signal.

A dual-gate protected FET was used for this stage as it requires no neutralisation and is currently a very popular device both in availability and performance. Signal is then coupled into the mixer T2 via L3 which is positioned physically 7/8 in. centre to centre from L2. Oscillator injection is applied to G2 of this device. The 330 ohm resistor in the drain of T2 correctly matches the input of the low-cost 10.7 MHz Murata filter type SF10.7MA. Some sacrifice in gain is made here but it is amply recovered by IC1.

IC1, a uA753 "gain block" as it is called by its manufacturer, has some 30 dB gain at 10.7 MHz and no instabilities of any kind have been encountered during its use. This integrated circuit consists of a three-stage direct-coupled amplifier with 330 ohm input and output terminations and with its 7 pF shunting capacitor appears to have been tailor-made for the ceramic filter used! Output from pin 5 of this device is AC coupled and goes to the IF strip demodulator.

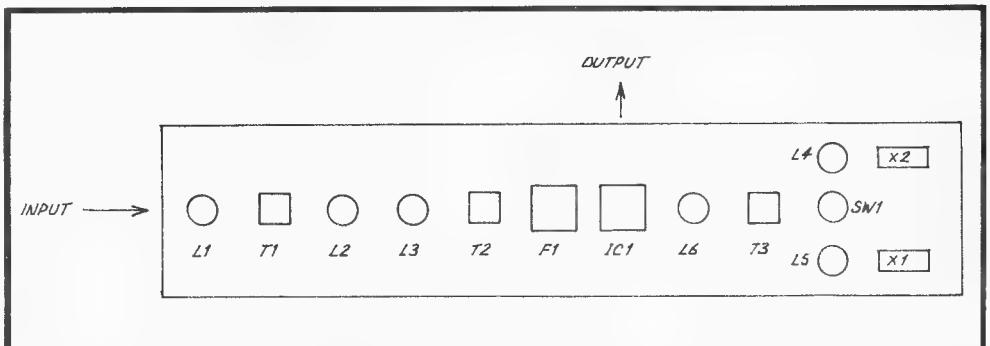

FIG. 1

The local oscillator is a well tried and proven circuit, having appeared several times in this magazine. Some difficulties were initially encountered around the switch area but keeping lead-lengths of L4 and L5 to a minimum cured the problem.

Construction of the unit should follow good VHF wiring practice in that all leads be as short as possible, especially bypass capacitors. The prototype was constructed using pins through single-sided printed circuit board — remembering to clear the copper from the pin where it is not required! The earth plane provides good connection points for all components connected to ground.

Fig. 1 shows the placement of major components.

The in-line arrangement of all components forms a good basis to ensure stability and the completed unit is totally enclosed in a brass box.

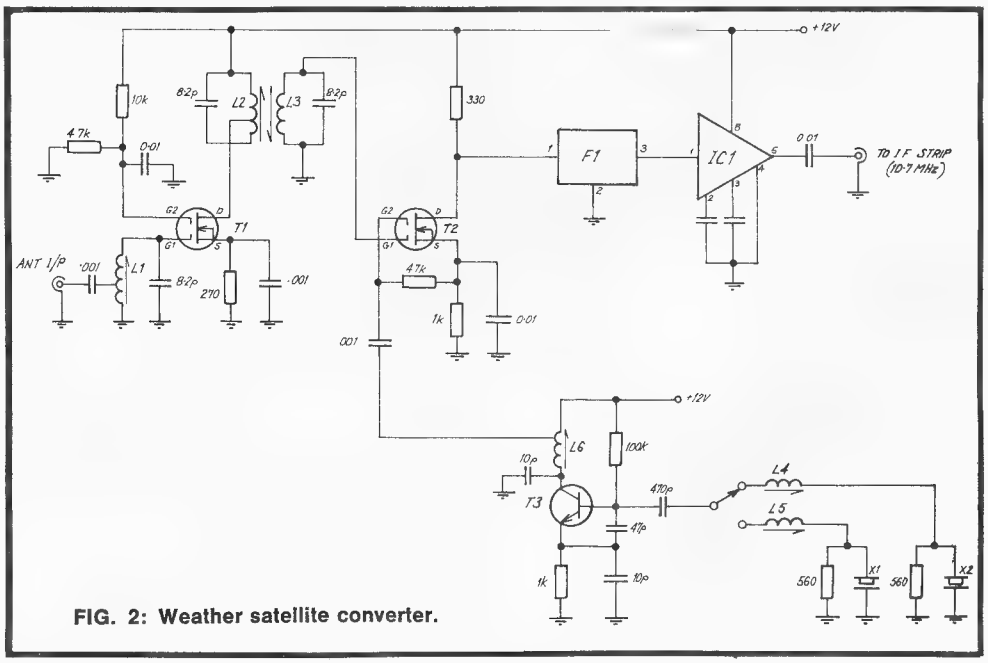

FIG. 2: Weather satellite converter.

Tuning is simple once the crystal oscillator is functioning. L4 and L5 are provided to enable frequency trimming and L6 is tuned to the 3rd harmonic of the crystal. An input signal midway between the two frequencies (137.50 and 137.62 MHz) is applied and L1, L2 and L3 are adjusted for maximum output.

Although the unit as described was constructed specifically for weather satellite reception it requires only minimal modification to form the basis of a good 144-148 MHz front end. It should however be kept in mind that the integrated circuit used is a FM limiting device and as such is not suitable for AM or SSB reception.

Further correspondence by interested persons is invited.

Previous article by same author: Amateur Radio, November 1972, "An Integrated Circuit IF Strip".

L1 5T No. 20 tap 1½T from earth.
L2 5T No. 20 tap 2½T from rail.
L3 5T No. 20.
L4, L5 12T No. 28.
L6 6T No. 18 tap 2T from rail.
L2 and L3 separated 7/8 in. C-C.

All coils on neosid formers with F29 slug.
F1 Murata filter SF10.7MA. ■

Writing an Article for "Amateur Radio"

One of the purposes of this magazine is to publish technical articles.

From what we hear on air, there are enough people doing interesting things to positively flood us out with articles.

Strangely enough, one of the commonest reasons for not submitting articles seems to be just plain shyness at committing things to print. Next is ignorance of how to go about it. Well, we do want YOUR article and if you read on we will tell you how to go about it.

WHAT CAN YOU WRITE ABOUT?

Anything which may be of interest to any other amateur. If it interests more than one, so much the better. The easiest thing to write about is something you have built, big or small. (There is a terrific demand for small articles of the Hints and Kinks variety.) Test equipment, VHF, mobile, antennae, gear for the newcomer, receivers, transmitters are all needed. There is also a place for theoretical or instructional articles, but don't try these without a bit of experience. If in doubt, ask the Editor if he thinks the subject would make a suitable article.

HOW DO YOU WRITE IT?

Technical articles should be written in as simple and direct a manner as possible. The "level" should be chosen to suit the subject and the type of reader for whom the article is intended. Most articles will be intended for that mythical being, the average reader. Simple sentences are usually far more effective than long involved sentences.

Plan your article along logical line so that the reader does not have to jump backwards and forwards between the various sections. For example, a simple constructional article could be organised as follows:—

Introduction: Scope and aim of the article, advantages of the equipment, etc.

Circuit: General description.

Layout and Construction: Special features.

Operational Details: Alignment, testing, etc.

Results achieved.

If possible, type your article and *always use double spacing;* otherwise use lined paper and remember that your article will have to be read by printers and other persons who may not be acquainted with technical terms, so *write legibly.* For preference use a paper size quarto or foolscap and leave 1 in. margins. The printer, quite rightly, charges us for the extra time involved in handling articles written on the backs of tram tickets, brown paper, confetti, etc. Type or print on one side only, number each sheet, and write your name and the title of each sheet.

Articles should be as brief and concise as possible; "padding" should be avoided at all costs. Never hesitate to submit an article simply because it appears to be of less than average length.

Use standard English and avoid jargon such as "short" for "short circuit", 'amp." for "current", "volts" for "voltage", etc.

When finished, get someone to read it out aloud. You will soon see if it has continuity and is legible to a person other than yourself.

Sketches and circuit diagrams should be drawn on separate sheets of paper with the figure number, title and your name on the top. Almost invariably these will have to be re-drawn by our draftsmen. This is one of the hardest yet least known jobs of the Magazine Committee. If you have drafting knowledge or can get it done by a friend, then help us to ease the drafting bottleneck by supplying circuit diagrams ready for the plate-maker.

The width is the important measurement. If the drawing will occupy one column in width, make your drawing 4½ in. wide, as it will be reduced in processing to half size. Two and three column drawings should be 9 in. and 13½ in. wide respectively.

All lettering should be 3/16 in. high and make all lines heavy to help reproduction.

All lettering should be kept within the confines of the drawing; we have to pay on the maximum width and height taken by the plate-maker, in calculating the cost.

We are always happy to print photographs.

As the circuit is usually the heart of the article, you cannot take too much care in seeing that it is correct, that the values of all components are given and that it is arranged so as to be easily read. There are two systems for giving the component values; one is to print the value by the component, the other is to label them R1, R2—C1, C2—L1, L2, etc., and give a table of values underneath. The first system is probably easier to prepare and to read, whilst the second is the only way of stating voltage ratings, wattages, etc., of components. We have no fixed ideas as to which to use. Probably a compromise system is best where usual components are marked with values and unusual components marked R1, etc., and commented on underneath.

WHAT THEN?

Having written the article and prepared the diagrams, send them to the Editor, C/-PO Box 150, Toorak, Vic. 3142. If you do not receive acknowledgment in say three or four weeks, contact the Editor and ask him what's happening.

The normal delay for drafting, editing and type setting is about three months. Completed articles have to be in the printer's hands not later than the first of the month prior to the month of publication. So the shortest possible time in which an article can be published is approximately five months. Circuits which involve a lot of drafting take longer.

Looking forward to your article,

We remain, your humble servant,

The Magazine Committee.

(Derived from a previous AR article, February 1955.) ■

UNITY IS STRENGTH

Mobiling the American and Canadian Rockies

Arthur Brown VK2IK and XYL Phyl
26 Winifred Ave., Epping, N.S W. 2121

During the northern summer of 1940 whilst returning from Britain, a mate and myself motorcycled across USA and Canada on my 1934 600cc Square Four Ariel bike and sidecar. We covered the 6,000 mile journey from New York to Vancouver in six weeks via Niagara, Grand Canyon, the Rockies to Calgary and over what was then the rough Kicking Horse Pass and through to Vancouver. I was so impressed by the scenic grandeur of the National Parks that I had a yearning to see these parts again.

In 1978 plans were laid first of all to visit friends and relations in Britain and then fly to Los Angeles and organise for a nostalgic journey. This would be along the Rockies and as far north as a 12-week period in the American Continent seemed feasible. It was hoped also to take 2 metre gear and to acquire HF gear in the States so that we could meet the "locals" and keep in touch with VK.

RECIPROCAL LICENSING

Some homework had to be done first with reciprocal licensing for W and VE and also international driving licences. Statements of accident-free driving were also obtained from our insurers which proved quite useful for G-land, but worthless for W-land. Thereby hangs another tale! The Canadian reciprocal licence came almost by return post, but the US application was most protracted even extending to within a few weeks of our arrival from London in Los Angeles (May 1979), taking six months to complete. Intending applicants should note that not only do you supply copies of your Amateur Operator's Certificatt and current station licence, together with the appropriate application form, but you must also supply a copy of your Amateur Station Licence which verifies your VK call sign and furthermore, if the expiry date of your current station licence occurs during the period you wish to have the reciprocal licence, then this must be renewed, maybe months in advance, before the application will be processed.

Thus it was in February 1979 that XYL Phyl and myself left Sydney Airport in a heatwave and 29 hours late arrived at Heathrow in a snowstorm! Having had a reciprocal licence previously for G-land it was a fairly simple matter to have the call G3TMO re-validated at the Home Office. This required the re-sighting of the Amateur Operator's Certificate and current station licence, filling in the application and payment of the fee.

The weeks passed rapidly, visiting family and friends. The 2 metre gear fitted into the temporary car we purchased helped to keep in touch with the "locals". Like many others before us we queued around Australia House for two days and finally sold the car.

W & VE LAND

Next day we flew up into the Arctic Circle and saw glimpses of Iceland and Greenland far below and then the iceberg-strewn sea of the Hudson Bay. Our approach to Los Angeles was over the snow-capped Rocky Mountains, and then over what appeared to be desert areas of California.

At Los Angeles we were met by a nephew who, in conjunction with helpful friends, assisted us with accommodation and local knowledge. A one-owner 1967 Oldsmobile automatic station wagon with power steering and air-conditioning was obtained and fitted up for camping. A support bracket was fitted to the luggage rack, which then mounted the "G whip" multi-band antenna.

INSURANCE PROBLEMS

As mentioned earlier, problem arose with insurance despite the insurance statements from home. We did not have a Californian driving licence nor were we residents of USA. One insurance broker finally accepted us only to notify us later at Salt Lake City that his company had overruled his decision. And so we went the rounds of SLC until finally a helpful broker solved the situation for us. One broker remarked that there would have been no problem if the vehicle had been owned by a resident of USA with us as nominated users! A useful hint perhaps!

Going south to Oceanside I was able to obtain a 5-band Alda HF 200W PEP solid state transceiver. It was surprising to find the factories of Swan and Atlas all nearby at the same place. The combination of the Alda and G-whip worked well and opened many a door throughout the trip. It was also very effective in jumping the Pacific Ocean back into VK. Very early in the tour we met up with Harry VK2DA in Balgowlah. We were at our Sunset Crater camp in Arizona when Harry appeared 5 and 9 on 14 MHz. For the next nine weeks he was to be like our "Genie". At a time when mail strikes were "on" in VK Harry brought us news of Sydney and of our family. Sometimes it was by CW but mostly by SSB. Whilst in W6, W7 and KL7, to escape the American kilowatts I was obliged to respond in CW below 14.200, then after exchanging reports, QTH, etc., we would move up to the phone band to try SSB both ways. In VE6, VE7 and VY1 the solution was simple, keep out of the American phone band and use SSB. We were indeed grateful for these early morning contacts which, despite the distance, made VK and home as close as the Alda. At times, with mountains soaring thousands of feet above our camp-site, it was surprising the signal strengths which came over seemingly impossible pathways.

XYL's DESCRIPTION OF TOUR

A lot of the account which follows was prepared by XYL Phyl from letters to family and friends. From Oceanside we were soon on our way across the Mojave Desert to Las Vegas, Lake Mead and Hoover Dam and seeing the Colorado River which flows through Grand Canyon country. Grand Canyon has to be seen to be believed, as no photo does justice to its mighty splendour and mile-deep gorge. On the South Rim shuttle buses take tourists from one view point to the next, thus eliminating private cars on the rim edge. To see the North Rim it is necessary to drive around 100 miles through the Painted Desert area. We took the opportunity to visit Lee's Crossing where the rubber boats take parties down the rapids. Spectacular orange-red cliffs tower above the river against a vivid blue sky. Our trip

to the North Rim brought us up the mountain range again into snow country and wilderness area.

From Arizona into Utah we traversed Zion Canyon looking up from the Virgin River to great outcrops of massive rock eroded to fantastic shapes by time and weather. Further on Bryce Canyon National Park rose to elevations of 9,000 ft. and we looked down on vast areas eroded by water, ice and snow over the centuries, leaving formations of columns, spires and pinnacles of pink, orange, red, mauve, purple and white. It amazed us to see forests at such high elevations, for our Mount Koscuisko in Australia loses the tree line at 6,000 ft. We were cold at night and snow still lay about. Tiny chipmunks begged at our feet for food and we longed to feed them but complied with the many requests not to do so. It seemed hard to believe that these dainty creatures could be possible carriers of bubonic plague. Following the great mountain range through farmlands and such places as Big Rock Candy Mountain, we came to the modern University Cities of Provo and Salt Lake City, where we stayed for a few days. We visited the Mormon Temple grounds, listened to the famous Tabernacle Choir and Organ, looked over the City and visited the Salt Lake itself.

Further north the Grand Teton National Park with its serrated soaring peaks, blue lakes, streams, glaciers, forests and wilderness is a magnificent area. Crossing the mountains at an elevation of 8,429 ft. we descended into the valley of the Snake River, where fur traders penetrated this entirely Indian country in the early 1800s and hunted beaver. We appreciated the Visitors' Centres in these National Parks, which are a mine of information. This is bear country, with moose, bison, elk and deer, and we could see some of these in the distance far from the road. Entering the famous Yellowstone National Park at an elevation of 6,886 ft., we later crossed the Continental Divide at 8,000 ft. with ice-edged lakes and piles of snow. Then we came to Yellowstone Lake with a crater basin. What an experience to see boiling water holes, mud pots plopping, hissing steam vents and far above it all snow-capped mountains. What a country! Old Faithful Geyser displayed well for us with a spout of boiling water at least 100 ft. high. The Yellowstone Grand Canyon is spectacular with the river descending in two falls a total height of 400 ft. and these viewed from various points along the canyon make an impressive sight. With much thermal activity, high mountains, vast forests, fossil areas, prolific animal and bird life there is so much to intrigue the tourist.

We made further north in the Rocky Mountains to the Glacier National Park, and were pleased to find the "Going to the Sun Road" just opened for traffic. Here we crossed Logan Pass at 6,664 ft. with snow banked 30 ft. high each side of the road and snow ploughs still in operation. Views below of lakes and mountains were breathtaking in their beauty. We were soon into the equally beautiful Waterton Park in Canada and later when travelling in the Kootenay National Park we saw our first bears — a mother and two babies. It was rather showery in Banff National Park, but we enjoyed what we could of this lovely setting of mountain, forest, river and lake. From 1940 Arthur had spoken of Lake Moraine as the highlights of his experience. The weather was deteriorating when we visited these, but still it was a glorious sight to view glaciers locked between mountain peaks soaring high above the lake. Lake Moraine was still partly ice with the mountain snows not yet fully melted to fill the lake. Next morning visibility was bad with snow falling and low cloud, so we went down the Kicking Horse Pass viewing waterfalls and the Canadian Pacific Railway which was built here in 1908 using unique spiral tunnels to reduce the grade. The following morning, with the weather slightly improved, we were just able to distinguish outlines of some great mountains along the Icefields Parkway to Jasper. Bow Lake was completely covered with thick ice and it was snowing when we ventured on the 600 ft. thick Athabasca Glacier in a snowmobile. West from Jasper we found Mt. Robson (13,000 ft.), the highest point in the Canadian Rockies, and we appreciated the burst of sunshine and river reflections of this great glacier-capped mountain when we awoke the next morning.

PHOTO 1:
Equipment used for tour. Back, l. tor.: Multimeter and SWR (home brew), Kenwood TR2200G and 10 watt PA (2Mx). Centre, l. to r.: Ant. loading coils (80 Mx, 40 Mx, 20 Mx), 2 Mx quarter wave gutter mounting and cable, Alda 105 HF transceiver, "G" whip adjustable top section, 20/15 Mx helical top section, "G" whip helical section 10 Mx (two halves).

In Prince George on 2 metres we contacted Frank VE7AV (the local RI) and his Australian XYL, Diana VE7DTO, who came to see us at the camp ground. They gave us useful information on a Field Day scheduled to be held in Whitehorse, Yukon, the following weekend. Making our way towards the famed Alaska Highway, we detoured to look over the W.A.C. Bennett Hydro Dam which supplies Vancouver with electricity, and from Fort St. John we were on THE Highway. Reports stated that the road was unsealed but firm. What we did not expect was the afternoon thunderstorms which came without fail, coinciding with the grading of the road in readiness for the tourist season, and the consequent slush which covered vehicles so that they all appeared one colour — black! Our only puncture on the entire trip happened in rain on the Alaska Highway! Liard Hot Springs proved a pleasant oasis and we thoroughly enjoyed the novelty of bathing in 120°F water in the depths of the forest with snow-covered mountains above. In this pool we met some Australians, including a resident from our suburb! From this area we phoned the radio inspector in Yukon (Ian VY1AR) for permission to use the radio in the Territory. We were promptly invited to share in the Field Day and also offered the use of the Inspector's self-contained flat overnight. This was most acceptable, and next morning we joined the party of amateur radio people at Marsh Lake.

The Field Day proved one of the highlights of our trip, for it was here that we met most of the radio fraternity of Whitehorse. Possibly because of the extremes of winter in this area (—20°C to —60°C) necessitating indoor winter activities some wives had also qualified as radio amateurs,

so that of the 16 operators present, four were ladies. The transmitters were housed in two tents on the lake beach in front of the cabin owned by one family (Bill VY1BJ and XYL Sherron VY1BK). Children of the party amused themselves in the lake itself. We were told that the water had been frozen solid only a few weeks before — brrr! We had many insights into life in the Yukon during those 24 hours of operation of Amateur Station VY1DX portable VY1 and felt privileged to have been there participating in their club activities.

PHOTO 2:
Group at Field Day, Whitehorse, Yukon VY1DX Club Call. Back row, l. to r.: John VE7CWG, Bill VY1BJ, Brian VY1BE, Ron VY1AD, Ian VY1AR, Al VY1AH, Arthur VK2IK/VY1, Pauline (XYL VY1BE). Front Row, l. to r.: Dennis VY1BZ, Andre VY1CD, Gerry VY1BV, Sheila (XYL VY1BV), Dorothy WB6EPW (XYL VY1AN), Janet VY1BP, Kirk VY1CC, Sherron VY1BK (XYL VY1BJ), Sue (XYL VY1AR), Sharon VY1AL (XYLBR), Finlay VY1BR, Kirstin (friend of VY1BE family).

MODULATED CORONA

An interesting phenomena observed during the early evening of the Field Day was the corona which appeared atop one of the trap verticals. One of the party had heard strange sounds and seen flashing lights sounding "CQ field day VY1DX portable VY1". Sure enough we had a modulated corona 4 inches long sloped at about 70° because of the breeze across the lake. This appeared from the trap vertical transmitting on 80 metres fed by the 1 kW linear.

Driving on the new highway over the White Pass of perpetual snows proved an intriguing journey en route to Skagway, Alaska. This route of the would-be Klondyke gold seekers is steeped in the 1898 gold rush history and in Skagway we saw evidence of the bitter conditions these people experienced in trying to seek their fortunes. Skagway itself is a funny little "has-been" town at the end of the Inner Passage. Dilapidated buildings are in course of being restored and historic tours are conducted telling the short history of the sudden upsurge of population, the consequent influx of con-men, amusement parlours and pubs.

It was sheer luxury to go aboard the MV Malaspina and occupy a cabin overnight and to sit in the lounge by day and watch the scenery go by. Bad weather prevailed, but in the gloom we saw Haines, Juneau, Petersburg, Wrangell and even had a bus tour of Ketchikan. We stayed overnight at Prince Rupert and resumed our journey on the Canadian vessel "Queen of Prince Rupert" along the narrow Grenville Channel to Vancouver Island. With improved weather we enjoyed driving the full length of the Island midst its extensive forest country. Here again through the radio we met Dick VE7DJH and XYL Cora, were invited to their home and given much appreciated hospitality. Victoria is very British, even to red double-decker buses and a contingent of Palace Guards complete with busbies. Our visit to the Butchart Gardens was rewarding — then over to the mainland and we drove up Howe Sound to Squamish, north of Vancouver. On the way out of Vancouver at Whiterock, we called in to see Al VE7AYN and XYL Evelyn. We had initially contacted Al on 10m earlier in the trip.

Seattle, USA, with its backdrop of Cascade Mountains, is a fine city and, of course, we had to go up the 600 ft. Space Needle to view the surroundings. Nearby Mt. Baker we learn is still active and constant watch is kept on its seismic movements. Later we travelled to see Mt. Rainier, another 14,000 footer with 27 glaciers atop — scenes like this are unknown in Australia. Leaving Mt. Rainier we met at Mossyrock "Duke" WB7TQD and XYL Moe. It was a surprise meeting through the interest of the proprietor of the motel we stayed at overnight. We enjoyed their hospitality and had a good chat. Further on we saw evidence of great natural upheavals at Crater Lake National Park, Lava Beds National Park and Lassen Volcanic National Park. At Lake Tahoe, altitude 6,000 ft., we admired the scenery of the Sierra Nevada Mountains surrounding the blue forest-edged lake and further on the Calaveras Giant Trees, the largest living things on earth.

To reach the Calaveras we came over the Sierra Nevada Mountains at Ebbetts Pass, a narrow gravel road peaking at 8,700 ft. We later found out that the locals use this rather reluctantly as a better surfaced road taking a longer route is more suitable. After the Calaveras at the mountain village of Arnold, we briefly visited Walt W6ECF and XYL Bernice. From Arnold we found our way up another pass to Yosemite.

Despite the heat, loss of power steering and holiday crowds, Yosemite National Park, with forest, mountain and Sequoias, was something to experience. Likewise, our brief visit to the Sequoia National Forest, King's Canyon. Returning to Los Angeles after nine weeks and 8,820 miles by car and boat, it was great to think over all the varied things we had seen — mountains, canyons, thermal areas, giant forests, wild animals, tiny humming birds, huge glaciers and vast icefields. And with it all we had made a lot of new friends, for in every place we found the American and Canadian people to be most outgoing and friendly.

Several years earlier we had met over the air Em WA6OCT at LA. It was our pleasure to be hosted by him and Bernice his XYL before being farewelled by our earlier mentioned friends at Southgate, Los Angeles.

After an uneventful flight across the Pacific we at last welcomed the sight of our fair City and harbour bathed in early morning sunshine as we prepared to land at Kingsford Smith Airport. It was great to be safely home again with the family. ■

QSP

A DIFFERENT BEACON

An article in QST January 1980 describes the WB6ZNL beacon which may be described as an automated, digitally-controlled, high-power standard signal generator. It is on 14100 kHz every 15 minutes at and from the hour and temporarily located on Stanford University, south of San Francisco. The message transmitted via the non-directional antenna is on CW at the 100 watt level followed by a series of five 9 second dahs at power levels decreasing from 100W to 0.01W in laboratory calibrated 10 dB increments. Each dah is preceded by one to five dots to identify the power level. After the 0.01W dah the 100W signal is switched back for the sign off. ■

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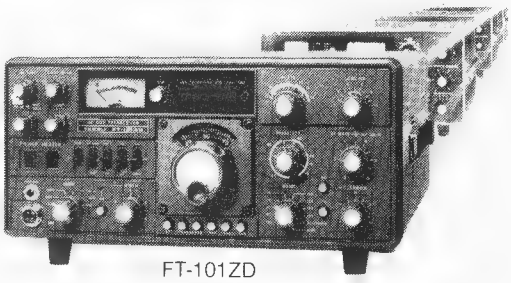

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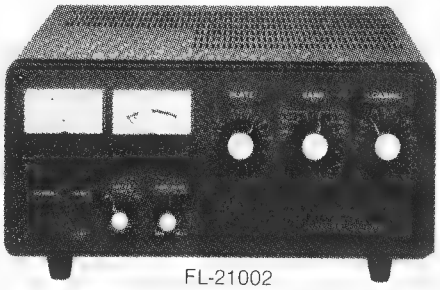

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The Value of Wireless Telegraphy

Arnold E. Lawrence VK3BHI
Flat 5, "Brentwood",
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Death claims fewer victims today from among those who go down to the sea in ships than it did before the advent of wireless telegraphy. How often, in stories of sailing ships, do we read quotations such as these: "She left Monte Video for Australia, but never reached port. Some wreckage, later found near Cape Horn, was identified as part of the ship". Or this: "She left Buenos Aires for Australia, but never arrived. Sighted off Monte Video soon afterwards, she disappeared leaving no trace at all of the 45 cadets and 15 crew who were on board".

Our story is quite different. It tells of the part wireless telegraphy played in the rescue of the Oil Tanker Havre, adrift in a southerly buster in the Tasman Sea.

With engines stopped through lack of fuel, and lashed by cyclonic storms, the tanker Havre was blown off course in a wide circle in the direction of Lord Howe Island. She was ultimately rescued and towed 365 miles into Newcastle by the tug Champion. Without wireless, there is every likelihood she would have disappeared without trace.

This is not fiction, but a true story of the sea and the actual happenings, as told by the wireless operator, then a youngster, and by now possibly the only surviving member of the crew.

The story begins in New Zealand. At the close of World War 1 I joined the ranks of hundreds of officers and seamen who became redundant as their ships were laid up. Scores of unemployed seamen roamed the waterfront searching for work. One day I was lucky to be on the spot and available when the Tanker Havre arrived in Auckland minus her wireless operator. I was sent up to Auckland to join her.

First impressions of the Havre were disappointing. She was small and dirty, only a few thousand tons gross burden . . . a real tramp compared to the floating palaces of today, with their glamorized accommodation, but what a mighty ship she proved to be, to come through the pounding she got. To me she was a job, three meals a day, and a bed.

The general bustle of unloading was in progress with the usual rattle and roar of winches. As I stepped aboard I passed the 2nd engineer, a ferocious looking individual, yelling orders to some of the Chinese crew, and calling them a lot of bloody bastards. I wondered what I'd struck, but the 3rd mate said, "Don't worry about him, the bugger's never sober — he doesn't know any better."

I next presented myself to the Captain, and told him I had been sent as the new wireless operator; frankly he seemed quite indifferent.

"I don't know that we really need an operator," he said. "We came all the way from Singapore without one. He wasn't much good anyway, and couldn't get more than 50 miles on the set. He wasn't there on sailing time, so we had to leave without him. Still if you would like a trip to Singapore we'd better get you signed on."

In view of the Captain's remarks, I guessed the transmitter was faulty. We could not go to sea with it like that, so I called in the Auckland Superintendent, and between us we spent a whole day on it, and gave it a complete overhaul, after which it performed perfectly. On the trip out of Auckland stations 500 and 600 miles away were raised easily on transmitter and double that distance receiving — reasonably good even by today's standards.

Our final port of discharge was Dunedin. There was no return cargo — however for the long trip across to Newcastle a large qnantity of extra coal was required. The main bunkers were fully loaded, after which extra coal was piled loosely on the well-deck.

The ship's compliment of officers was nine. The bosun, steward, cooks and crew, were all Chinese. Having the wireless in operation was very welcome, bringing, as it did, daily news, racing information, sporting, as well as weather, time checks and contacts with the Agents.

As we passed Banks Peninsula, we were rolling steadily . . . the weather was bitterly cold and threatening. Weather reports were bad. Whisps of icy spray splashed through the decks and rigging. In the distance we could see the snow covered Kaikouras on our port quarter, and shivered in the icy blast from them.

It was on the following morning that I heard intermittent revolver shots coming from the bridge. The Captain and Chief Officer were taking pot shots at sea birds, some of which were Albatrosses, and one or two were shot and killed. This appeared to be flirting with providence somewhat. No one takes the legend of the "Ancient Mariner" seriously these days of steam and diesel — nevertheless a strange premonition lingered that something grim and mysterious was about to happen to the ship.

Approaching Cook Strait, the glass dropped ominously and we knew we were heading for some kind of dire trouble. We had not long to wait. A gale of hurricane force sprang up with great rapidity, similar to what happened to the Wahine recently. Heavy seas fighting with eight knot currents churned up confused tumbling and bursting seas — the ship became hard to handle — taking sights was difficult and vital to our preservation. The officers were constantly taking bearings on anything visibility would allow. The Captain peered over the charts continuously. If he was worried he was wise and never showed it. He just gave orders in a quiet and even voice.

We got a bearing on Pencarrow light on the cliffs outside Wellington, also another one on the Brother's light on the northern tip of Marlborough Sound. Pencarrow light is very high, and in low visibility many ships have missed it and come to grief on the rocks at the foot of the cliffs, referred to jokingly by sailors as the Pencarrow cemetery. A lower light has since been built, and the light at Pencarrow discontinued. Only fifteen miles separate the two islands at this point, and in this kind of weather, one navigational error is usually the last.

With the gale partly tailing us in a dangerous manner, we slammed and yawed our way through Cook Strait, until Stevens Island light showed up on the port beam. This indicated that we were through the narrows and heading for the open sea. The wind now hauled round to the south with fast increasing force, and really hit us. Mountainous seas tossed the ship about in an alarming manner. She heaved and dipped and yawed. The wind shrieked through the rigging and superstructure. Every now and then an exceptionally heavy sea would crash aboard, to hiss and roar through the decks and passageways like a clap of thunder. In the black-

ness of the night the ship would lift up on a huge wave, hover drunkenly on the crest, and slide down headlong into the black depths of the next wave, to bury her nose in it with a sickening thud.

The engineers, too, had a problem calling for endless watchfulness — the drunken movements of the ship brought her stern high out of the water with every second wave, this could set the screw racing and tearing the shaft to bits unless the throttle were clamped down right away.

Weary eyes on the bridge were searching for Cape Farewell light, which was at last picked up through the bad visibility. Numerous bearings were taken giving a good fix. Farewell light is the topmost point of the South Island, and juts well out into the Tasman Sea.

We were now well clear of both islands and heading in the open sea towards Newcastle.

Some confusion existed now about our coal supply. Slamming through Cook Strait, although at a mark-time rate, had consumed as much coal as if a longer distance had been covered. Furthermore, heavy seas breaking aboard had played havoc with the coal on the well deck. Practically all of this had been washed over the side. The Captain and Chief Engineer were gravely concerned with this situation. The Chief seemed unable to calculate the amount of tonnage we had remaining. He finally worked out that with what we had left we might just make Newcastle, provided the weather improved.

During this time, radio contact was maintained with Australian and New Zealand stations, also many ships among which were the R.M.S. Maheno, R.M.S. Ulimaroa, S.S. Maine and the battleship H.M.S. Renown, all of which were ready to stand by.

The weather at this point moderated a little and speed was increased slightly to get well clear of the land. Just as well, because the wind swung round to the south-west bringing a cyclonic gale from that direction. Out in the open sea with a longer fetch the waves reached greater heights, The Second Mate, who got a line from the bridge through a block on the cross-bar, calculated the waves were from 30 to 40 feet high.

Four days of cyclonic storms, and with practically all our coal exhausted, we were still only halfway across to Newcastle. The Chief Engineer admitted that we had only one day's coal supply remaining at this stage, with 430 miles to go. More fuel had to be found, so a start was made in stripping all the woodwork of the ship. This included the linings of the bunkers and the holds. The fires were stoked with this fuel, but it was soon obvious at the speed that it was consumed that this was futile.

As there was no battery emergency set for the radio it was decided to conserve the rest of the woodwork for raising steam on the donkey engine to run the dynamo for sending wireless messages and making contacts with the outside world.

At this stage the Captain gave orders to heave-to, and a wireless message was despatched to the Agents for a tug to be sent to our assistance. The Mate was ordered to construct a deep sea anchor and a riding sail, and be ready to rig them.

At this stage the Chief Engineer greeted us with the cheerful little announcement that our fuel was exhausted, with the exception of the seven derricks. These we had to hold for sending wireless messages.

We soon lost steerage way and were at the mercy of the screaming gale. We were all over the place, and soon in the trough, wallowing and rolling to an alarming extent, and drifting helplessly northwards.

At breakfast, whilst struggling to eat, an extra heavy wave hit us, and hurled the ship right over on her side. The whole saloon practically stood on end — dishes and gear flew everywhere. We all grabbed the table and hung on to anything at all. The Captain was hurled against the bulkhead on his back.

"My God, she's going over," he exclaimed, in a tense but calm voice — we waited — but she didn't. After what seemed an eternity she gradually righted herself, coming back with a series of shuddering jerks, accompanied by the thunder of blocks and tackle and moving equipment. "We're bloody lucky to be alive after that lot," said the Captain — I have never known a ship roll that far before — "Get that deep sea anchor overboard quick — rig the storm sail too — don't bugger about — get cracking — otherwise we'll all be at the bottom of the sea.

The saloon and officers quarters were reduced to a shambles. Struggling amidst the chaos, I came upon the Second Mate, who had stopped at the Second Engineer's room. With a humorous grin he said, "Get a load of this, Sparks". There was the Second Engineer, amidst the wreckage of his room, on his knees.

"What the hell do you think you're doing?" yelled the Second Mate. "Don't tell me you're praying for that miserable soul of yours — it's not worth bloody-well saving." Rough sailor humour if you like, but a good laugh often helps. After all, weren't we all praying inwardly that the ship would hold together . . . and what about a prayer of thanks to the men on the Clyde who built her.

The Second Mate and I washed up on deck. The deep sea anchor had just gone overboard forrard. Soon it gripped the water. Round came the bow in a series of lurches, dives and shipping of seas. The storm sail on the mizzen blew the stern round fore and after to the wind and sea. The gale was driving us northwards off course, but hove-to as we were, the immediate danger of capsizing was at least averted.

To maintain wireless contact, fuel had to be found to fire the donkey engine. The remainder of the linings of the bunkers and holds had now be consumed. The stage had now been reached where we were on the last remaining fuel supply — and these only for communication — our seven derricks. These were sawn up into three feet sections, and split in pieces with wedges and used very sparingly. Wireless messages and positions were only sent at special intervals — oil lamps were used for navigation and lighting.

Constant contact was maintained with the Agents, who advised that the tug Champion, fitted with radio, had left Newcastle in search of us, and asked us to wireless constant ship positions, drift, wind force, etc. A series of schedules was worked out. When the power became available, all messages outwards were sent, followed by a request for all inward messages to be sent on speck, and these would be acknowledged later when the power came on again. Regular positions were being sent and received by the Champion, but due to the low power of the transmitter of the tug, Sydney would lose contact during the day as we did. From our positions, wind drift, etc., it appeared we were being blown in a wide circle in the direction of Lord Howe Island. The Champion calculated this also, and headed in that direction.

On the sixth day of the drift, the double humped peaks of Lord Howe Island showed up on the starboard quarter. The thunder of the surf on the rocks could be clearly heard. That same afternoon a loud contact was made with the tug Champion, who reported that she was sixty miles away and making to us at seven knots. Glasses and telescopes were out searching the horizon, but it was not until 10 o'clock that night that an excited yell came from the Third Mate on the bridge — "Ship's light abeam — low down on horizon". First of all the three masthead lights appeared about three miles away, then the red port, and the green starboard lights, and later the porthole lights. A fairly high sea was still running, so the Champion approached us cautiously, working round the stern and standing off our starboard quarter. We could hear the throb of her powerful engines.

Soon she was within hailing distance on megaphones. "HAVRE AHOY" came the hail across the blackness.

"Champion ahoy," yelled our Captain through the megaphone. "Where the hell have you been?"

After a short pause came the reply. "Expected to pick you up nearer Sydney . . . had gales ond poor visibility all the way. Left without a chronometer, so had to search on dead reckoning — we're lucky to get here — how are you off for food? — our food supplies are exhausted — have not eaten for 24 hours."

"OK Captain. We're glad to see you anyway. Yes, we have plenty of food. We'll get a line to you as soon as day breaks, which won't be long. Stand by till then."

As dawn was breaking a line was passed to the tug, a bosun's chair rigged, and soon bundles of food were on the way to the hungry crew of the Champion.

About an hour later a tow line was shackled to the anchor chain of the Havre, and the long tow to Newcastle commenced. Supplies of fuel for the donkey engine were barely sufficient to send our last wireless message out but it got away all right. It was to the effect that the tug Champion had reached us and had us in tow, doing six knots in steadily improving weather. From this stage on the Champion took over communication.

The moral of this story can be summed up in three short findings.

1. Don't kill an Albatross.
2. Don't leave port without efficient wireless equipment and someone to work it.
3. Make sure you have sufficient fuel for any emergency. ■

Why ASCII?

Stan Horzepa WA1LOU
72 Stiles St., Watrebury, CT 06706
Reprinted from QST April 1980

In the February instalment of QST ("ASCII/RPT", page 83), there was a discussion about the merits of a proposed repeater system designed for ASCII communications. As a result of that column, a number of readers asked, "Why ASCII?" Many agreed that ASCII would provide the fastest means of Amateur Radio communications, but that advantage would be lost because the majority of amateurs cannot even type as fast as the slowest Baudot speed of 60 w.p.m.

Can ASCII be used for practical communication? ASCII communications will be different than most of the forms of communications we amateurs are presently accustomed to. ASCII's closest cousin is Baudot-encoded radioteletype (RTTY). If you are familiar with Baudot RTTY, you know about the utilization of pre-punched paper tape and pre-recorded magnetic tape to send "RTTY art" and "brass" messages (messages that contain general information about the operator and his shack). This pre-programmed information is created before it is ever actually transmitted. In ASCII, in order to use high communication speeds to their fullest potential, pre-programmed information will be the name of the game.

The communication of pre-programmed information is not limited to art and brag messages. Some hams, who are also computer hobbyists, are already exchanging computer programmes via Baudot RTTY. Programmes written in machine language, as well as in higher-level languages such as BASIC, are being transmitted on 20 metres daily. Most of these programmes must be converted from seven-level ASCII (assuming that these programmes were written on computers using ASCII) to five-level Baudot. Software, hardware and sometimes both are necessary to perform the conversion. Now that hams are allowed to use ASCII, the conversion to Baudot is no longer necessary, and the conversion software and hardware can be eliminated.

Let's get something straight — a computer is not necessary for ASCII communications. A computer is an accessory. The reason that ASCII and computers are synonymous is that ASCII is used by most computers. ASCII is simply another code, as are the Morse and Baudot codes. The transmission and reception of ASCII will require equipment very similar to that used to transmit and receive Baudot. Some kind of ASCII terminal is necessary. A printer and keyboard will do the job or, if you prefer, the keyboard may be used with a video terminal instead of a printer. As in Baudot, the digital information leaving the terminal equipment must be converted to analog information (to the frequency-shift-keyed pulses used in radioteletype transmission). And all received (analog) signals must be converted back into digital information in order that the terminal equipment may display the received message. The conversion from digital to analog and analog to digital is accomplished with a modulator and demodulator just as it is accomplished in Baudot communications today.

Traffic handlers, who are interested in achieving the most efficient means of relaying traffic, might discover that ASCII can help them reach their goal. High-speed communications will mean high-speed traffic handling, and to take full advantage of ASCII and its relationship with the computer world, an ASCII traffic system may be created.

The key to this system would be regional ASCII-traffic repeaters. Such repeaters would need good coverage and would have to be tied to a microprocessor with a good-size memory. These repeaters would accept ASCII-encoded traffic 24 hours a day. As each message was received, it would be sorted by the microprocessor according to its destination and stored in memory for future relay. Local traffic would eventually be relayed to other stations checking into the repeater that could handle the traffic. Traffic destined for adjacent regions could be relayed to the regional ASCII-traffic repeaters in those adjacent regions. These inter-regional relays would be accomplished by linking the repeaters on a regular schedule. During each link, traffic destined to the other region could be relayed to the other repeater where it would be stored for local distribution. Traffic destined to go beyond adjacent regions could be relayed to a ham who would be a liaison to an HF ASCII transregional traffic net, or perhaps this traffic could be distributed to the distant regions by means of the future Amateur Radio satellites.

The only computer involved in this system would be the one in operation at the repeater. Users of this system would only need a terminal, modulator and demodulator to participate in ASCII traffic handling. Eventually, when the country is completely covered with regional ASCII-traffic repeaters, the HF liaison could be

eliminated and traffic could be relayed from regional repeater to regional repeater right across the continent.

A ham in Newington wishing to send a message to his cousin in San Deigo would sit down at his terminal and compose the message. The message could be punched on paper tape or typed into a message buffer. When the message was complete and ready for transmission, the ham would access the Hartford regional repeater and transmit the message at 1200 baud. This transfer would only take a few seconds, and when it was completed the repeater would acknowledge receipt. The repeater microprocessor would check the message's destination and store it for relay. On schedule, the Hartford repeater would link with the Bridgeport repeater and the message would be relayed to Bridgeport. Later, when Bridgeport and New York City linked, the message would again be relayed. After 20 or so links and relays, the message would reach the San Diego repeater. Upon being received there, the message would be sent into the microprocessor's "local" storage file. When a San Diego ham checked into the system, the message would be relayed to that check-in, who would deliver it to the cousin via the telephone.

Local groups could utilize similar ASCII repeater systems for local activity. Such systems could be the focal point for information exchange between radio club members. Messages addressed to individual members could be sent to the repeater and stored for relay to the addressed individual whenever he happened to check into the repeater. Club bulletins and Amateur Radio news could also be stored for relay to all stations checking into the system. Computer games could be played through the system. Individuals could compete against each other or against the repeater's computer. Systems similar to this are already in operation. They are using Baudot at the requisite slower speeds, however. Some of these may switch to ASCII in the near future.

High-speed communication is desirable, practical and advantageous in osme situations. Extensive on-the-air experimentation with ASCII will teach us a lot about the mode. The FCC has opened the way — it's up to us to perfect ASCII Amateur Radio communications.

ASCII PRIVILEGES

ASCII, conforming to the American Standard Code for Information Exchange as defined in the American Standards Institude Standard X3.4/1968, is permitted between 3.5 and 21.25 MHz as an F1 emission on frequencies where this emission is permitted at a maximum speed of 300 baud; between 28 and 225 MHz as F1, F2 and A2 emissions where these emissions are permitted at a maximum speed of 1200 baud; above 420 MHz as F1, F2 and A2 emissions where these emissions are permitted at a maximum speed of 19.6 kilobaud.

THE OLD BAUD GAME

Baud is the number of bits transferred in 1 second. So, 1200 baud means that 1200 bits are transferred in 1 second — 1200 bits per second (b.p.s.).

A bit is a contraction of **binary digit.** It represents the smallest single unit of information in a binary system. This information is either on or off; on is represented by 1, while off is represented by 0.

ASCII alphanumerics each contain 7 bits (for example, the letter "H" is ASCII-encoded as 10001000). Each character may be followed by an optional "parity" bit which is used to detect errors — for a total of 8 bits per character (7 character bits and 1 parity bit). If the transmission timing depends upon the reception of each character (asynchronous transmission), each character is preceded by a "start" bit and followed by one or more "stop" bits, for a total of 10 or more bits per character.

At 1200 baud, 171 7-bit characters will be transferred in 1 second, and 10,285 7-bit characters will be transferred in 1 minute. If parity, start and stop bits are added, only (sic) 120 characters will be transferred in 1 second, and only (sic) 7200 characters will be transferred in 1 minute. ■

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Microcomputers	Colour	50 mins.
Microcomputers	Colour	10 mins.
Winning Foxhunts	Colour	45 mins.
Auxilliary Battery Charging	Colour	30 mins.
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The average 60 min. Umatic Cassette and case weighs 850 gm. At this time the only formats for which this service is available is: ¾" Umatic — first choice, ½" Philips N1500 — second choice. Sorry, NO Betamax, VHS or N1700 etc.

For a full catalogue listing of WIA videotaped programs and a complete description of the services provided, refer to Jan. 1980 issue of Amateur Radio.

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Probably the most useful test instrument any Ham or CB-er can own! Fully self-contained. Docks with 'Leader' LIM870-A antenna impedance meter to provide the perfect way to achieve optimum matching. Can be used as a highly sensitive frequency absorption meter, too.

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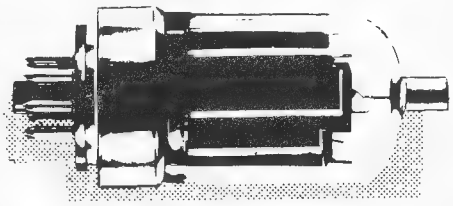

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NC512	3 Pin Mic Plug	1.50
NC513	3 Pin Mic Socket	1.50
NC514	4 Pin Mic Plug	1.30
NC515	4 Pin Mic Socket	1 20
NC516	5 Pin Mic Plug	1.50
NC517	5 Pin Mic Socket	1.50
NC518	6 Pin Mic Plug	1.50
NC519	6 Pin Mic Socket	1.50
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Oxley Region Amateur Radio Club

PO Box 712, Port Macquarie.
Excerpts from "Oxtales"

ANNUAL FIELD DAY

The Club held its annual field day over the Queen's Birthday weekend; here are some of the comments associated therewith.

The Wireless Institute of Australia paid our Club a great tribute when four of the top ranking executive of the New South Wales Division journeyed from Sydney to attend at the Field Days. Club President VK2ZCV (Bill) extended a warm welcome to the WIA personnel — VK2BAD (Athol) President — VK2BSB (Sue) Secretary — VK2BOT (David) Treasurer and committee/local club member VK2ZHE (Henry). Smiles all round when they were presented with a genuine Rollands Plains hand made leather key tag complete with call sign etched upon. Tags were beautifully made by VK2PA and family.

Laughs all round when we heard old Mobile Fox come to a halt when claimed by a "hound" fitted out with a great battery of fog lights up front and a smart looking whip antenna! "Took a while to find us eh!" chirped the Fox to his co-pilot — "over here for your card boys — why so long catching us? — Where have you blokes been?" !!!!! "Gulp! Good evening Officer — no Officer — we are members of the Oxley Radio Club sir! — Yes — Yes Officer — thank you Officer — Yes — Good night Sir!" . . . wher! . . . "Come to think of it — wondered why he had that blue flashing light up on the turret!"

RESULTS (Saturday Fox Hunts)

2 metre 2 transmitter: VK2BYY (Jeff, Sydney) first; VK2BLI (Ian, Maitland) second.

40 metre: VK2BSB (Sue, Macquarie Fields) first; VK2BLI (Ian) runner-up again.

10 metre: VK2BAD (Athol, Sydney) first; VK2BSB (Sue) runner-up.

2 metre mobile: VK2AOZ (Aldis, Sydney) first; VK2BYY (Jeff) second this time.

Whilst all this was going on, our ladies served up afternoon tea and the rest of us enjoyed making new friends and meeting up with old ones. Right on the dot of 6 p.m. the hot dishes arrived and a really first class smogasbord became the focal point.

GOLDEN KEY AWARD: CW

The Club decided to answer the critics of CW by putting on the "Golden Key Award" as a contest for CW receiving. Speeds ranged from 5 w.p.m. through to 40 w.p.m. and were mixed random letters and numbers in groups of five. Novices appeared too shy to enter the contest and a really top trophy went begging! You know, only one Novice needed to enter and take the very first letter or so and the prize was theirs! Simple as that. The local club members took out the big event, with VK2PA (Pete) running out the winner. VK2BJH (Jack) and VK2DK (Chic) were runners-up and there was not a lot in it, I can assure you. VK2PA had only 19 errors in over 20 minutes of continuous CW; his top speed peaked at 35 w.p.m. and in legible hand written copy. Pete's normal plain language speed is around 50 w.p.m. The magnificent trophy consisted of a miniature morse key (working model) mounted and framed in a highly polished rosewood frame and base. It was designed and made by local member VK2VWC (Cliff, who received spontaneous congratulations on his excellent craftsmanship. Thanks to all who entered and made the contest really worth while. Thanks VK2ATM (Art) for preparing and decoding the tapes. Also VK2BXO (Rick), VK2ZUM (Graham), who assisted Art with the judging. We've learned a lot from our first try — perhaps you might see the event next year as a perpetual "Challenge" award.

PHOTO 1: A great group of smiles. Members of the Oxley Region ARC discussing their 1980 Field Day programme with WIA NSW Division Chief Executive. Left to right: VK2BFP (Lester, Secretary), VK2BSB (Sue, Sec. WIA), VK2BDT (David, Treasurer), VK2ATM (Arthur, Vice-President), VK2BAD (Athol, President WIA), and VK2ZCV (Bill, President).

A TRIP INTO THE PAST

I almost overlooked mentioning an exhibit at the Field Days which drew continuous and obviously genuine interest. Thanks go to VK2ADI (Jack) for bringing along his "home brewed" 2m (AM) rig of the days gone by. Briefly, the line-up of this "make it yourself days" transmitter is 6A6/CO/Tripler to 24Mc — 807/Doubler/48Mc — 815/Tripler 144Mc — 829 in the PA. The rig first saw the airwaves on 16th September, 1949.

Jack also held a few records with "old faithful" back in those days of very few operators. Most notable was the distance record of 126 miles between Bowral and Aberdare (Jack's then QTH), which was logged with VK2BG on 5th March, 1950. I also took a look over Jack's shoulder at his log book of those times — well over 2,000 contacts in the year — that's really working — remembering it's around 30 years ago! ■

PHOTO 2: Jack VK2ADT displaying his homebrew 2m (AM) rig of days gone by.

A REMINDER

A WIA MEMBERSHIP CERTIFICATE IS OBTAINABLE ONLY FROM YOUR DIVISION.

COLLECTORS' CORNER No. 3

The SX 200 Scanning Monitor Receiver

The days of listeners confining activities to the "DC" bands are long gone as the introduction of microprosessor controlled "ears" for VHF and UHF have opened up a whole new world in listening.

The SX 200 is one of many "new breed" receivers using microprocessors, thus eliminating the old process of crystal acquisition and switching. The SX 200 is the superseded version of the original and very popular SX 100, with increased frequency coverage including switchable FM-AM operation.

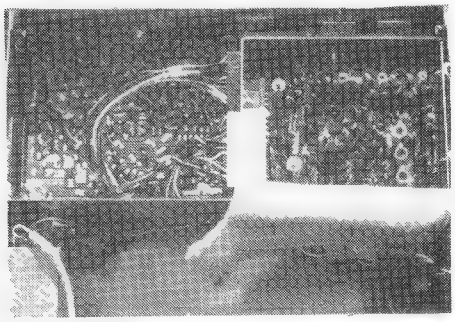


PHOTO 2

Top view of the SX 200 with oscillator/mixer section at right. Note the rectangular metal section at rear of the unit — this is a battery compartment to supply the memory unit for frequency recall when the main unit is switched off.

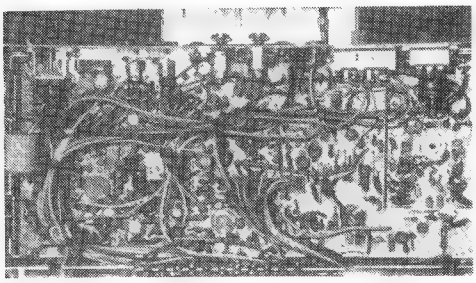


PHOTO 3

Close-up bottom shot of SX 200 showing rear portion neat wiring and lay-out.

The original SX 100 was only able to scan up in frequency. This has been changed on the SX 200 where an upper and lower limit may be programmed into the memory and listeners wishing to find stations may do so between two parameters at ease. As can be seen in the specification table, frequency range is broad and allows a listener to a wide range of services including commercial, aeronautical and amateur.

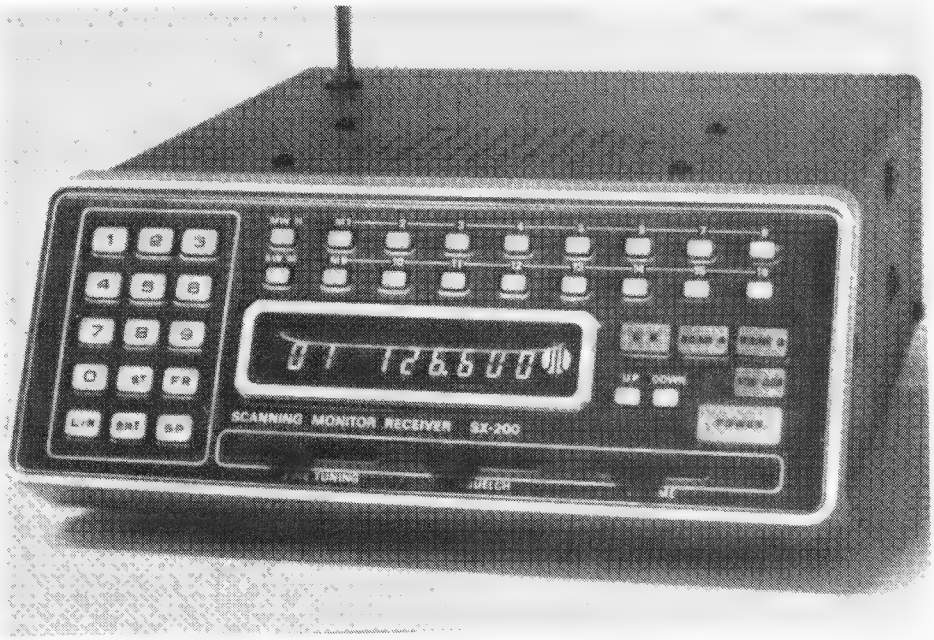


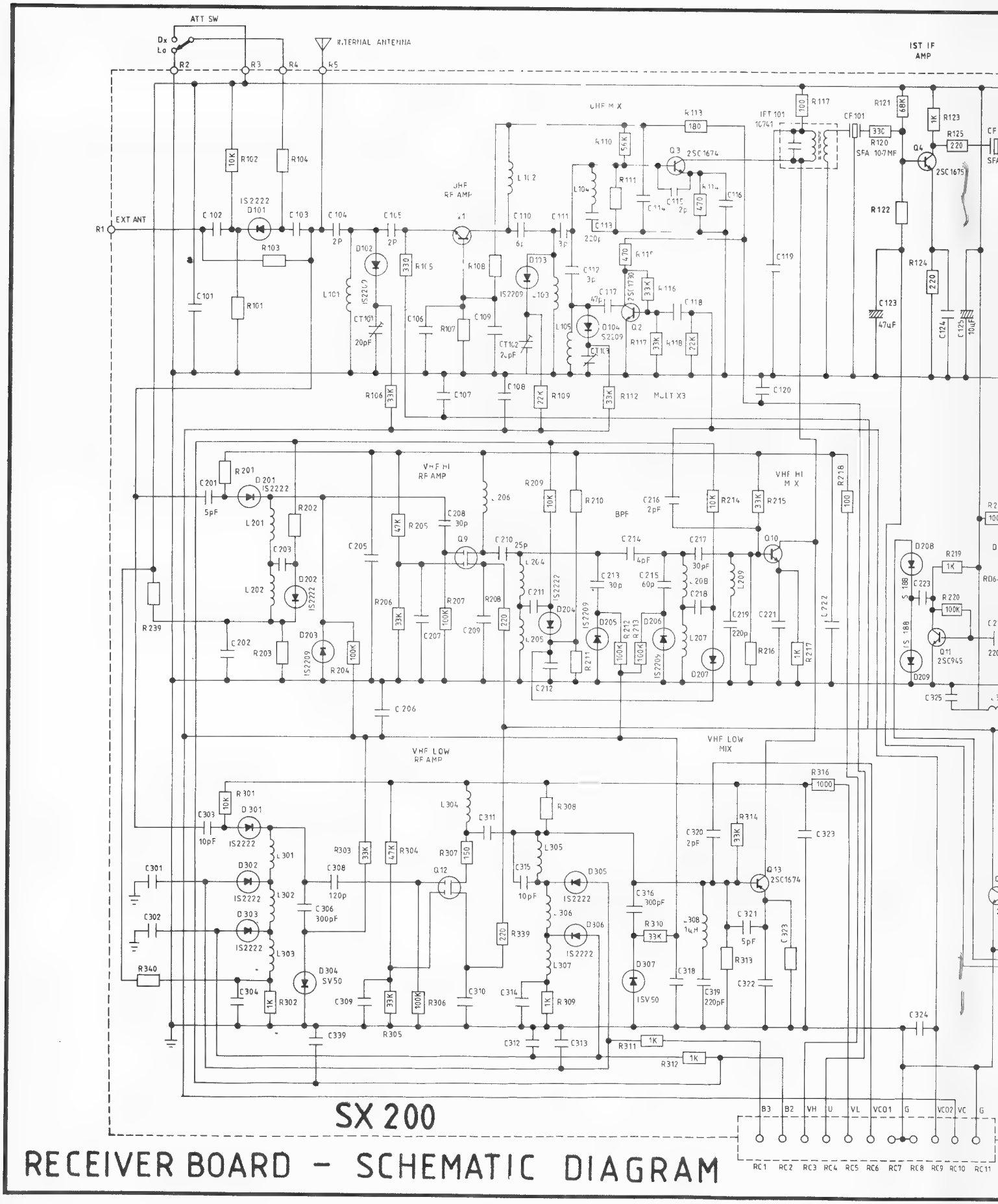
PHOTO 1: Front view of the SX 200.

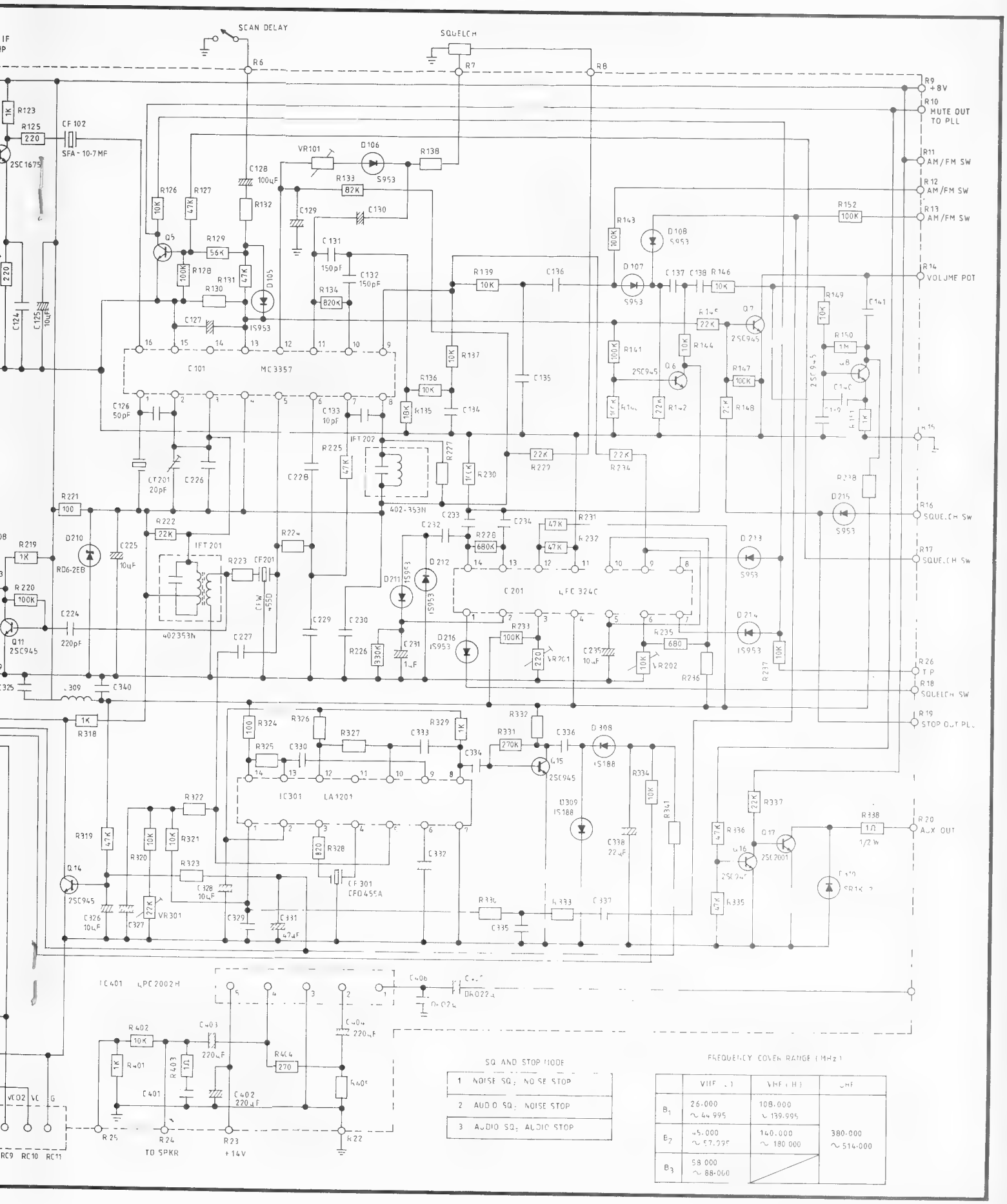
SPECIFICATIONS

1. Type	FM & AM			
2. Frequency Range	a) 26 ~ 57.995 MHz	Freq. Space	. . .	5 KHz
	b) 58 ~ 88 MHz	" "	. . .	12.5 KHz
	c) 108 ~ 180 MHz	" "	. . .	5 KHz
	d) 380 ~ 514 MHz	" "	. . .	12.5 KHz
3. Sensitivity	FM . . . a) 26 ~ 180 MHz	0.4 uV	S/N 12 dB	
	b) 380 ~ 514 MHz	1.0 uV	S/N 12 dB	
	AM . . . a) 26 ~ 180 MHz	1.0 uV	S/N 10 dB	
	b) 380 ~ 514 MHz	2.0 uV	S/N 10 dB	
4. Selectivity	FM . . . More than 60 dB at +25 KHz			
	AM . . . More than 60 dB at ±10 KHz			
5. Audio Output	2 Watts			
6. External Speaker Impedance	4 ~ 8 ohms			
7. Power Supply	AC 120V, 50 ~ 60 Hz or DC 12V			
8. Antenna Impedance	50 ~ 75 ohms			
	Whip or External Antenna with LO/DX Control (20 dB ATT.)			
9. Frequency Stability	26 ~ 180 MHz	Within 300 Hz		
	380 ~ 514 MHz	Within 1 KHz		
		(at normal temperature)		
10. Clock Error	Within 10 sec./month			
11. Memory Channel	16 Channels			
12. Scan Rate	Fast	8 Channels/sec.		
	Slow	4 Channels/sec.		
13. Seek Rate	Fast	10 Channels/sec.		
	Slow	5 Channels/sec.		
14. Scan Delay Time	0 ~ 4 sec.			

KEY TO FRONT PANEL FUNCTIONS — SX 200
(Refer Figure 2, page 28)

1. **Keyboard Frequency Selector Buttons (1 — 0)**
   Select any frequency in any of three bands — VHF Low, VHF High, or UHF (including the T-Band).
2. **Stop Button and Dot (●) ●ST**
   Stops UP or DOWN Seek or Scan A or B Function. Places decimal point in selected frequency.
3. **Limit Write Button LIM**
   Sets upper and lower frequencies of search range.
4. **Frequency Entry Button ENT**
   Is finally pushed to enter frequency.
5. **Speed Change Button SP**
   Controls speed variation for UP or DOWN Seek/Scan Functions.
6. **Frequency Display Button FR**
   Interrupts constant time display to show fre-


ATT SW
Dx
Lo
INTERNAL ANTENNA
EXT ANT
IST IF AMP
UHF MIX
UHF RF AMP
MULT X3
VHF HI RF AMP
VHF HI MIX
BPF
VHF LOW RF AMP
VHF LOW MIX
SX 200
RECEIVER BOARD - SCHEMATIC DIAGRAM


SCAN DELAY
SQUELCH
R6
R7
R8
R9 +8V
R10 MUTE OUT TO PLL
R11 AM/FM SW
R12 AM/FM SW
R13 AM/FM SW
R14 VOLUME POT
R15
R16 SQUELCH SW
R17 SQUELCH SW
R26 TP
R18 SQUELCH SW
R19 STOP OUT PLL
R20 AUX OUT
R25
R24 TO SPKR
R23 +14V
R22
C101 MC3357
IC301 LA1201
IC401 μPC2002H
IC201 μPC324C
402-353N
402353N
IFT 201
IFT 202
CF 102 SFA-10.7MF
CF 301 CFD455A
VR101
VR301
VR201
VR202
2SC1675
2SC945
2SC2001
RD6-2EB
1S953
1S188
SQ AND STOP MODE
1 NOISE SQ: NOISE STOP
2 AUDIO SQ: NOISE STOP
3 AUDIO SQ: AUDIO STOP
FREQUENCY COVER RANGE (MHz)
VHF (L)
VHF (H)
UHF
B1 26.000 ~ 44.995 108.000 ~ 139.995
B2 45.000 ~ 57.995 140.000 ~ 180.000 380.000 ~ 514.000
B3 58.000 ~ 88.000

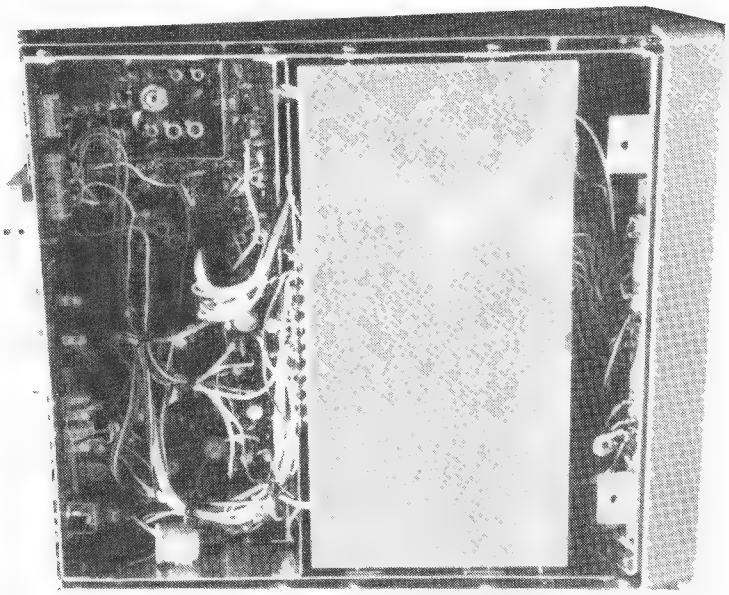


PHOTO 2: Bottom view of the SX 200 interior.

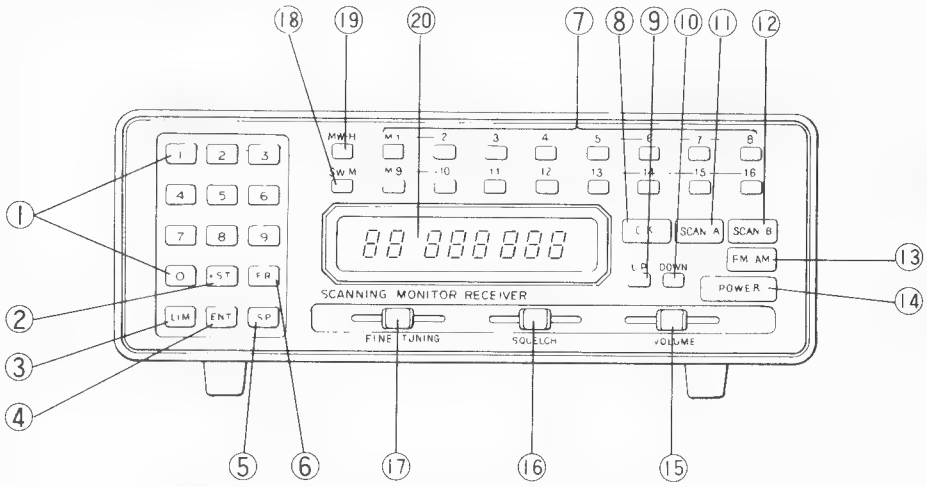


FIG. 2: Control functions — front panel on the SX 200.

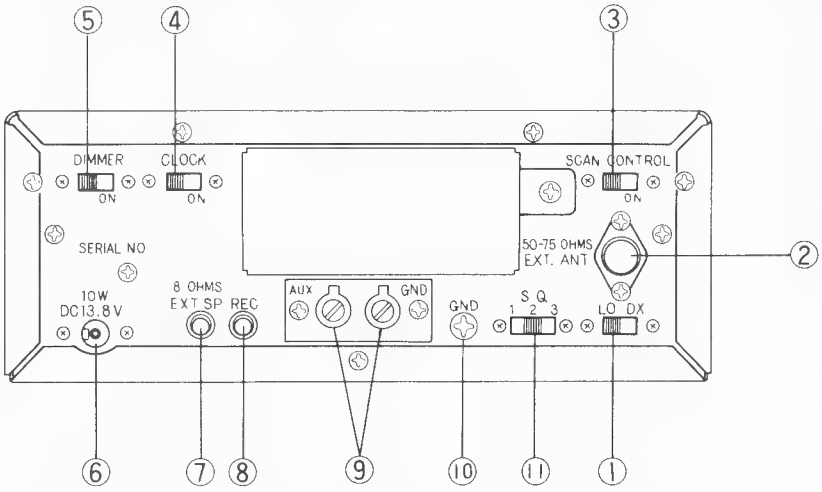


FIG. 3: Rear view of SX 200 scanner. Refer to text for key to accessories.

quency being received.

7. **Memory Read/Display Keys M1 — M16**
   Programmes your own most-listened to frequencies in any of the three bands. Retrieve any frequency desired when corresponding button is depressed.
8. **Clock Display and Adjustment Button CK**
   Brilliant digital LED clock — accurate to the second. Retrieve and adjust time.
9. **Up Button UP**
   Starts seeking upwards, moving through frequencies in increments of 5 kHz or 12.5 kHz and stopping on a transmitting channel.
10. **Down Button DOWN**
    Starts seeking downwards, moving through frequencies in decrements of 5 kHz or 12.5 kHz and stopping on a transmitting channel.
11. **SCAN-A Button**
    Scans the 16 memory channels (M1 — M16) stopping on a transmitting channel.
12. **SCAN-B Button**
    Scans selected priority channels within the 16 memory channels, stopping on a transmitting channel.
13. **FM-AM Switch**
    Selects modulation of frequency to receive, i.e., Amplitude (AM) or Frequency (FM). If desired AM typed modulation for receiving, push this button. If FM typed required, unlock it.
14. **Power ON/OFF Switch**
15. **Volume Control**
    Adjusts sound level as desired.
16. **Squelch Control**
    Adjusts to block out unwanted noise.
17. **Fine Tuning**
    Small frequency adjustment such kind of figures as 0.0005 MHz is made.
18. **Scan Write and Minute Adjustment Button SW●M**
    Programmes priority memory channels for SCAN-B function and minute.
19. **Memory Write and Hour Adjustment Button MW●H**
    Programmes desired frequencies into memory channels for SCAN-A function and hour.
20. **Digital Display Panel**
    Shows 5-second readout of selected frequencies. Registers passing frequencies during SCAN or UP/DOWN SEEK modes. Shows constant time display (except during SCAN or SEEK modes). Shows time readout when CK button is depressed.

KEY TO REAR FUNCTIONS OF SX 200 SCANNER

1. **Local/Distance Switch** allows for optimum reception in both strong and weak signals. Normally set in Distance (DX) pos. for max. sensitivity. In strong signal areas, stations may interfere with each other. To minimize interferences, move switch to LO for Local position.
2. **Connection for External Antenna.**
3. **Scan Delay Control** delays resumption during pause in transmission. Moving the slide switch to ON varies holding time on a freq. 0-4 secs.
4. **Clock Switch.** For only Clock (Time) display, slide switch ON, thus Power switch is off, time always displays.
5. **Dimmer Control Switch** changes light and darkness (ON) of display.
6. **Connection for Power Cord.**
7. **Output for External Speaker (Optional).**
8. **Recording Output REC.** Connect the input of open reel type or cassette tape deck to record.
9. **AUX Control Output AUX.**
10. **Ground Connection GND.**
11. **SQ 1. 2. 3.**

For further information on the SX 200 contact the Australian distributors, GFS Electronics, 15 McKeon Road, Mitcham, Victoria 3132.

Collectors' Corner is aimed at giving you, the reader, a better understanding of the types of equipment available for various applications in Amateur Radio. Your suggestions and comments regarding content in this section would be appreciated to ensure widespread reader appeal.

NEW J.I.L. SX-200

NOW A PROGRAMMABLE SCANNER THAT DOES IT ALL. 26 - 180MHz, 380 - 514MHz. AIRBAND, AUSTRALIAN LOW BAND PLUS ALL THE OTHERS.

FEATURING:
- Airband
- Australian low-band

The new SX-200 represents the latest STATE-OF-THE-ART technology in the development of Scanning Monitor Receivers. It has many features that previous have not been available on receivers of its type.

For example the tremendous frequency coverage, which encompasses all of the following bands:— HF & UHF CB, 27 & 155MHz MARINE, Australian LOW BAND, AIRCRAFT band, VHF SATELLITE band, 10Mx, 6Mx,2Mx and 70CMx AMATEUR, VHF HIGH BAND and UHF TWO-WAY band. Other features include Automatic detection of AM or FM on all bands, Squelch Circuitry that can be used to LOCK OUT carrier only and spurious signals, Fine Tuning control for off channel stations, 240 VAC plus 12VDC operation, Squelch Operated Output that may be used to trigger a tape recorder or channel occupancy counter and accurate Quartz Clock.

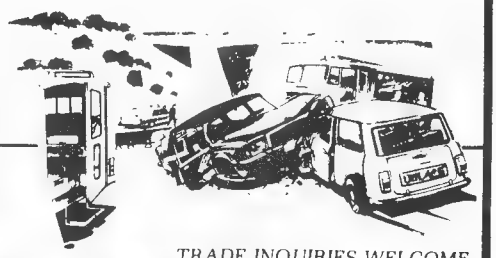
SPECIFICATIONS

Type:	FM & AM
Frequency Range:	a) 26-57.995 MHz Space...5 kHz b) 58-88 MHz Space...12.5 kHz c) 108-180 MHz Space...5 kHz d) 380-514 MHz Space...12.5 kHz
Sensitivity:	FM....a) 26-180 MHz 0.4uV S/N 12 dB b) 380-514 MHz 1.0uV S/N 12 dB AM ...a) 26-180 MHZ 1.0uV S/N 12 dB b) 380-514 MHz 2.0uV S/N 12 dB
Selectivity:	FM.....More than 60 dB at —25 kHz AM.....More than 60 dB at —25 kHz
Audio Output:	2 Watts
Ant Impedance:	50-75 ohms Whip or External Antenna with LO/DX Control (20 dB ATT.)
Freq. Stability:	26-180 MHz ... Within 300 Hz 380-514 MHz ... Within 1 KHz
Dimensions:	210 (W) x 75 (H) x 235 (D) mm 8-1/4 (W) x 3-1/4 (H) x 9-1/8 (D) in.
Weight:	2.8 Kgs.
Clock Error:	Within 10 sec./month
Memory Channel:	16 Channels
Scan Rate:	Fast .....8 Channels/sec. Slow .....4 Channels/sec.
Seek Rate:	Fast .....10 Channels/sec. Slow ..... 5 Channels/sec.
Scan Delay Time:	0 or 4 sec.

GET YOUR NEW SX-200 NOW!!

$479

NOW MONITOR AIRCRAFT, POLICE, AMBULANCE, 10, 6, 2 & 0.7mx AMATEUR BANDS, HF & UHF CB, PLUS HUNDRED MORE. INCLUDING SERVICES IN THE AUSTRALIAN LOW BAND



GFS electronic imports **J.I.L.**

Australian Agent & Distributor

TRADE INQUIRIES WELCOME

G.F.S. Electronic Imports, 15 McKeon Road, Mitcham, Vic. 3132 (03) 873 3939

JOTA 1980

Gus Napier VK1NBO
27 Robertson Street, Curtin, ACT 2605

The 23rd Jamboree-on-the-Air will be held over the weekend of 18th and 19th October. On the Saturday afternoon the official opening ceremony will be broadcast from Government House, Canberra.

The suggested starting time for participating stations is 00.01 hours (local) on Saturday, 18th October, and the closing time is 23.59 hours (local) on Sunday, 19th October. These are suggested times only — many stations may well find it more convenient for example to start their operations during Friday evening. Each station will be free to select its own times and periods for operating.

Local regulations must be observed of course. It is suggested that stations look for contacts close to the official World Scout Phone frequencies which are 3.590 MHz, 7.090 MHz, 14.290 MHz, 21.170 MHz and 28.590 MHz. Participating stations in all branches are reminded to **listen** before calilng "CQ Jamboree" to ensure that the frequency is not already in use. As soon as contact has been made on any frequency, stations should then shift to the nearest frequency so that others may be able to use the above nominated calling frequencies.

NATIONAL AUSTRALIAN OPENING CEREMONY

Again this year His Excellency the Governor-General, Sir Zelman Cowan, Chief Scout of Australia, has kindly permitted the opening ceremony to take place at Government House. This will commence at 2 p.m. on Saturday, 18th October, and the proceedings will be broadcast on 7.090 MHz, 14.290 MHz and 21.170 MHz by the official station VK1BP, which will be set up in the grounds of Government House.

All participating stations are therefore asked to co-operate by leaving these frequencies clear from 1.30 p.m. onwards until the conclusion of the ceremony.

The timetable is:—

1.30 p.m.: VK1BP, calling on each of the above three frequencies, will contact all official Branch Scout and State Guide stations, which will then call in after the official addresses.

2.00 p.m.: The official opening ceremony will commence with an address by His Excellency the Chief Scout, Sir Zelman Cowan. Her Excellency, Lady Cowan, who is President of the Girl Guides' Association in Australia, will then deliver her address, to be followed by supporting addresses by Dr. Norman Johnson, Chief Commissioner for Scouts in Australia and, it is hoped, by Mrs. Charlotte Renshaw-Jones, Chief Commissioner for Guides in Australia.

After the addresses, the officially nominated Branch HQ Scout amateur stations and the State HQ Guide amateur stations will be called in, in turn, starting with VK1 through to VK8, so that the nominated representatives can report briefly on the receipt of the addresses and present their compliments to Their Excellencies. These contacts should be kept brief so that other waiting Scout and Guide stations can be called in and given opportunities of talking to the official guests at the opening ceremony.

At the conclusion of the official opening, VK1BP will close down and will later recommence transmissions from the 1st Hughes Scout Hall, where VK1HS will also be in operation.

SUNDAY PROGRAMME

On Sunday at 3.00 p.m., VK1BP will be standing by on the official calling frequencies to receive brief reports from JOTA stations throughout Australia. Only one frequency at a time will be used, but advance notices will be given of band changes.

CW/SSB/RTTY may be used for calling in and stations are asked here to observe the following (telegram-type) format for their reports:

1. Call sign (after VK1BP has given the station the go-ahead).
2. The Scout/Guide Groups that are participating at the station.
3. QTH of the station.
4. Number of overseas JOTA contacts.
5. Number of overseas non-JOTA contacts.
6. Number of Australian JOTA contacts.
7. Number of Australian non-JOTA contacts.
8. Brief comments (say 25 words) on anything of particular interest to other JOTA stations.

JOTA ANTARCTICA

Incidentally, Kevin Campbell, a Rover Scout from Queensland, who is serving at the Mawson Base, has indicated that he will be taking part in JOTA from that QTH. He will be looking for contacts and hopes to use the best of the propagation frequencies as near as possible to the official frequencies. As far as is known, Kevin will be the only Antarctic JOTA representative. His call sign is VK0KC. ■

Amateur Radio Weekend

Sam Voron VK2BVS
2 Griffith Avenue, East Roseville 2069
Phone 407 1066

If you are studying for your November novice exam, in the Scouts or Guides and looking for an amateur station to operate during JOTA or if you are an instructor looking for a holiday in the Blue Mountains, then be advised that an amateur radio weekend has been organised especially for you.

Starting on Friday, 17th October, 1980, at 8 p.m., and ending Sunday, 19th October, 1980, at 2 p.m., the weekend will be held at Camp Carey, Lawson View Road, Wenworth Falls, just a 1½ km walk from the Wentworth Falls railway station.

Fees covering all food and accommodation are as follows: Under 2 years, $2.00; 2-4 years, $7.00; full time students and instructors, $18; others, $22.

These can be sent to:

Amateur Radio Weekend
Craig Robinson VK2PDF
PO Box 35, Croydon 2132.
Phone: (02) 74 0316. ■

QSP

WORLD OF AMATEUR RADIO

For those who might wish to listen to W1AW bulletins from the ARRL telephony segments are given on the half hour daily at 02.30Z and 05.30Z on 14.29 MHz, 21.39 MHz, 28.59 MHz and other bands, including 6 and 2 metres. RTTY bulletins are given daily from 02.00Z, 05.00Z, 23.00Z (also 16.00Z on working days) on 14.095, 21.095, 28.095 MHz and other bands. CW bulletins are daily on 01.00Z, 04.00Z and 22.00Z (also 15.00Z on working days) on 3.58, 7.08, 14.08, 21.08, 28.08 and other bands. Slow as well as fast code practices are transmitted frequently at other times. ■

PROPOSED NEW BANDS

"Tht IARU Region 1 Executive Committee recommends that the new amateur allocation 10,100-10,150 kHz be used for CW communication only.

This recommendation was made for the following reasons:

(i) To accommodate as many stations as possible in a small band which is allocated to the amateur service on a secondary basis worldwide;

(ii) Because of the fast growing amateur population; and;

(iii) to avoid harmful interference to the fixed service which uses this allocation on a primary basis.

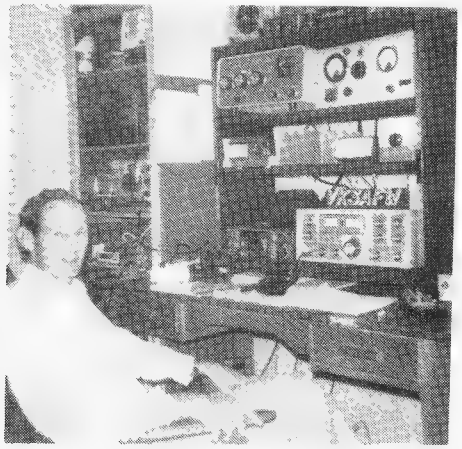
18 AND 24 MHz ALLOCATIONS

The IARU Region 1 Executive Committee agreed that:

(i) a proposal should be made to the 1981 Conference to set up an HF working group; and

(ii) this working group should then consider, as a matter of urgency, a band plan for the new allocations at 18 and 24 MHz."—Rad. Comm. July 1980. ■

NOVICE NOTES



Edited by Ron Cook VK3AFW

This month we start off with some antenna theory and conclude with two constructional articles on HF and VHF whip antennae.

THE SHORT VERTICAL ANTENNA

The Ground-plane:

Any wire or metal rod may be used as an antenna. We will only consider those less than 0.25 wavelengths long, that is, short antennae. We will also restrict this article to vertical antennae.

Let us assume that we have transmitting and receiving sites placed 10 km apart on flat highly conducting ground. As shown in Fig. 1 it is possible for the transmitted signal to be received by three paths, a direct ray, a ground reflected ray and an ionosphere reflected ray. In practice the ground reflected ray is usually absorbed by buildings, trees and poorly conducting earth. If our antenna were 20m high the ground reflected ray would be launched at an angle of —0.1 degrees.

The ionosphere reflected ray or sky wave is launched at 85 degrees for this short haul path. (Normally DX stations would require a launching angle of less than 20 degrees.) Note that if the ionosphere and the ground are perfectly smooth and flat then the reflections of the signal occur at 5 km range, exactly halfway between the antennae. This is the action of two perfect mirrors.

Because the earth's surface is curved and because it is covered by trees, houses, mountains, power lines, etc., the direct ray or ground wave travels only some tens of kilometres before being attenuated below the ambient noise.

Now for a question. What is the purpose of ¼ wavelength radials used on the so-called ground-plane antennae? And a second question. What is the purpose of burying up to 20 short radials at the base of a vertical antenna? It is clear that ground reflectives are of minor significance for all contacts other than the most local. Unless the radials were very long they could not give any mirror effect — ¼ wavelength radials provide reflections to a range of ½ wavelength!

Yes, ¼ wavelength radials for elevated verticals and buried short radials for ground based verticals are used, but as Professor Julius Sumner-Miller says, I shall leave the answer for another day and let you ponder on the physics.

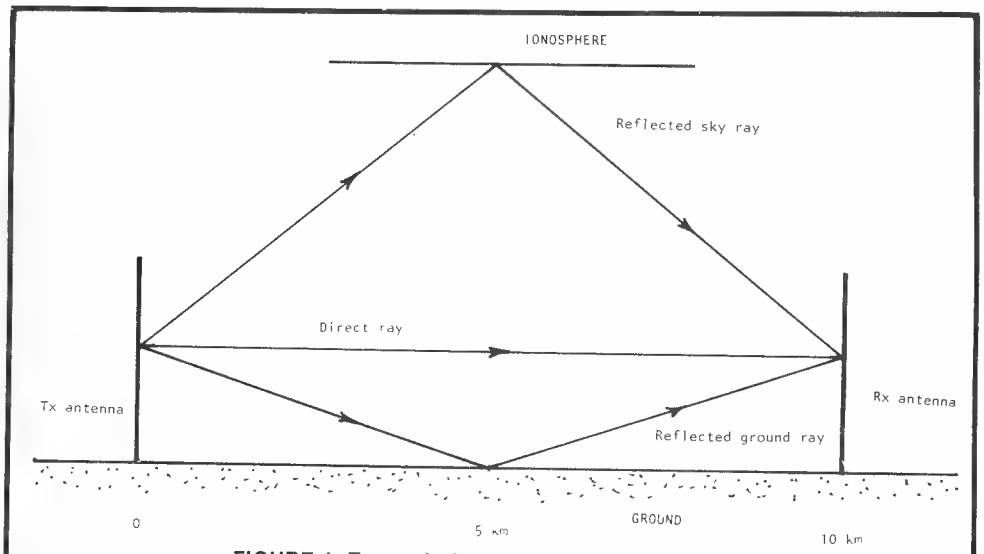


FIGURE 1: Transmission paths between antennae.

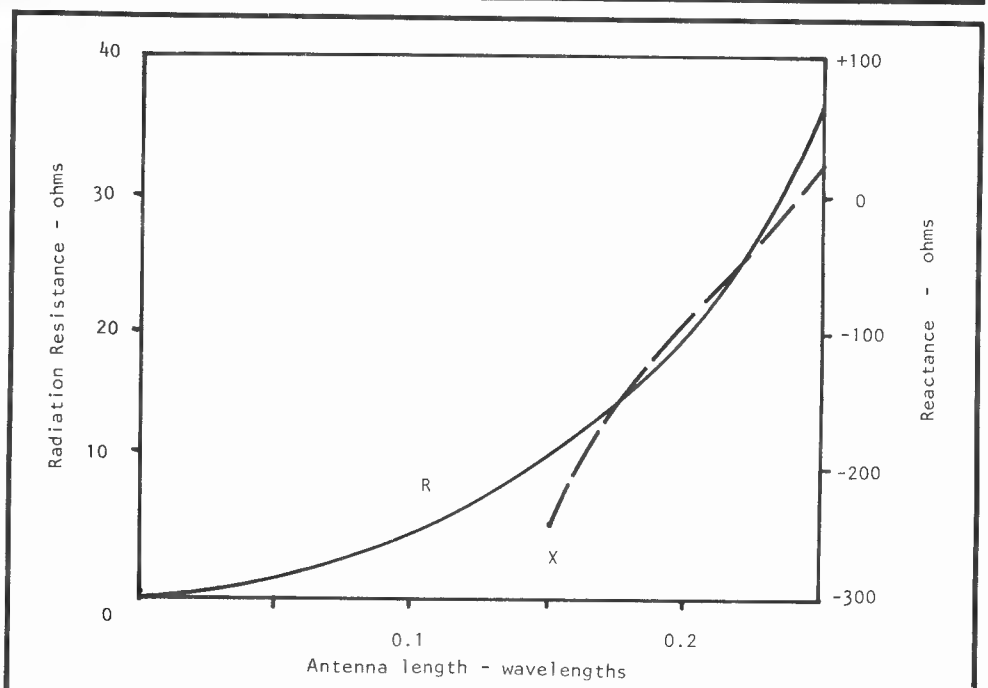


FIGURE 2: Impedance of short vertical antennae.

ANTENNA IMPEDANCE

I divert and direct your attention to Fig. 2, which is a graph showing the variation with length of resistance and reactance at the base of a short ideal vertical antenna. The base resistance is the radiation resistance in this case. The reactance in particular also varies considerably with variation in conductor thickness. The curve shows representative values for practical antennae and is based on curves given in the ARRL Antenna Handbook.

We can see that an antenna 0.1 wavelength long (1.04m at 28.0 MHz or 8.35m at 3.50 MHz) has a radiation resistance of about 5 ohms and a reactance of —400 to —500 ohms (equivalent to about 100 pF at 3.50 MHz) in series. This antenna is not resonant but can be made so by adding some 400 to 500 ohms of inductive reactance in series. The inductance may be wound as a solenoid and fitted at the base of the antenna. If its inductance is doubled it may be placed about halfway up the antenna. This is because the capatance to ground of the antenna above the coil is the primary influence for resonating the coil, especially when the antenna is very short.

Another method of adding inductance is to wind the whole antenna as a long thin coil — the so-called helical whip. The construction of these antennae is simple and, as can be seen by the following articles, eminently suitable for the home constructor.

WHY IS THE VSWR SO GOOD?

We have seen that the ideal antenna mentioned above had a feed-point resistance of 5 ohms. This, for a 50 ohm cable, is a VSWR of 50/5 = 10 : 1. In practice the VSWR will always be lower at resonance. Why? This comes about because after building our vertical we find that the vertical conductor has resistance. This is higher at RF than is measured on a DC meter. At radio frequencies the current crowds into a thin layer at the surface. The higher the frequency the thinner the conducting layer. This skin effect may cause the resistance of the antenna to rise from near zero at DC to say 5 ohms at our operating frequency. This is a loss resistance and does not help radiate a signal. Further, the resonating coil may add another 15 ohms of loss resistance. If this is a mobile installation the finite size of the vehicle, the resistance of the chrome plating, etc., may add 15 ohms of ground loss. The feed impedance at resonance is then 5 plus 5 plus 15 plus 15 = 40 ohms. This gives a VSWR of 50/40 = 1.25 : 1 which seems quite good. Unfortunately only the power delivered to the 5 ohms of radiation resistance produces signal — the other resistances just get hot. The antenna efficiency, or radiated power as a percentage of input power, neglecting mismatch loss, is (5/40) x 100 per cent = 12.5 per cent. That seems like bad news. The VSWR is better than the lossless antenna but the efficiency isn't flattering. Now the good news is that this means the radiated signal is 9.0 dB down on the signal from a lossless antenna, say 1½ to 3 S points, depending on your meter. If your signal were about 30 dB over S9 on an ideal antenna then you would drop to 20 dB over on the practical antenna. Until you get down to S3 reports the difference is not very significant. We will return to mismatch losses in the future — it is a fascinating and largely misunderstood area.

MODIFYING 5 FT. HELICAL CB WHIPS FOR HF MOBILE OPERATION

Dick VK5DQ has written an interesting article on modifying CB whips for 21 and 28 MHz. This article is reproduced from the SA Division's Journal for October 1979.

I was bitten by the HF mobile bug some months ago, after trying a 27 MHz helical whip on 28 MHz and working a number of Ws straight off from the driveway.

After making the acquaintance of a number of Novices on 15 metres, thanks to the excellent conditions prevailing earlier in the year, I decided to convert a CB antenna into an inexpensive 15 metre whip. I was given a 27 MHz helical whip with a broken loading coil winding, so I experimented by winding turns on until I got 1 : 1 VSWR over most of the 15 metre band. In modifying antoher whip since then, I have found there to be variation between apparently identical units, so anyone who does this modification will have to use trial and error, preferably helped by a twin-meter SWR bridge.

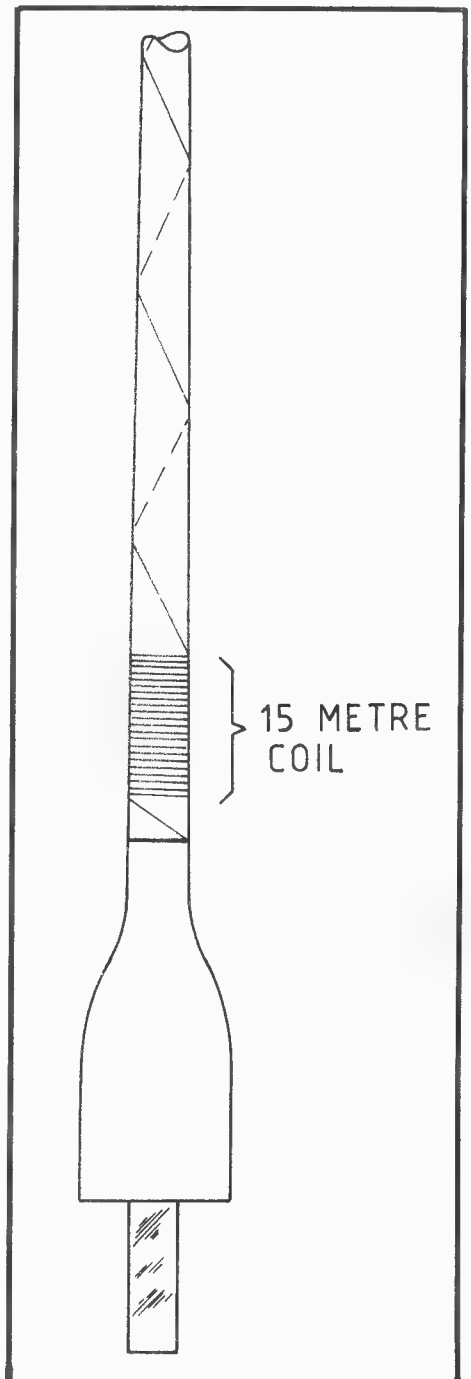


FIG. 1. The modified whip for use on 15m.

The number of turns required in the base loading coil also depends upon the way in which the aerial is mounted upon the vehicle and its location. Incidentally, I used Dick Smith "White Flash" antennae and other brands will probably require a different number of turns in the loading coil.

Using the modified antenna on 15m, I have worked VK, ZS, ZL, JA and W stations, both mobile/fixed and mobile/mobile.

Unmodified, these 27 MHz antennae load well on 28 MHz without doing any more than screwing the adjustment sleeve on the top downwards over several turns.

MODIFICATION FOR 15m OPERATION

Using a sharp Stanley knife, remove both layers of heat-shrink tubing at the bottom end of the whip for about 1¼ in. Cut the wire about ¾ in. from the base ferrule.

Using 22 B & S or 23 SWG enamelled copper wire, wind on about 33 turns, tightly and closely spaced, starting about 3/32 in. from the base, in a clockwise direction viewed from the extreme end of the whip. Scrape the enamel and tin both ends of the coil before soldering to the original antenna wire.

Mount the antenna on the vehicle and measure the VSWR into the feedline. Tune by pruning half a turn at a time from the coil until you reach near to unity VSWR at the centre of the band. You can check whether you need more or less turns simply by measuring the VSWR at different parts of the band. If the VSWR rises more at the top end of the band, then the antenna is resonant at too low a frequency and there is too much inductance in the loading coil, so you need to remove more turns.

On the first whip I used a magnetic base and needed 33 turns on the loading coil. After the antenna (complete with mount) had fallen off the vehicle a number of times while travelling at 20 m.p.h., I mounted the antenna on a single ski bar and found that I needed only 30 turns on the loading coil for resonance. This gave me VSWR readings of 1.0 : 1 at 21.0 MHz and 1.2 : 1 at 21.45 MHz, which was amazingly good. The other 15m whip, which I made from an apparently identical unit, needed 32 turns for similar results.

(Journal Editor's note: The mobile whip antenna looks basically like a series resonant tuned circuit, in which the top section is capacitive with a value of perhaps 10-50 pF, depending on length and conductor size. As the capacity to ground of the vehicle body is several hundreds of picofarads, it normally has little effect on the value of inductance needed to resonate the top section of the whip. However, if you use a magnetic base, the system becomes more complex, as the capacitance of the base to the vehicle roof is quite small and the antenna current flows over the outer conductor of the coax feed, back to the set, so introducing further impedance which has to be tuned out.)

OTHER BANDS

At present I am experimenting with both base-loaded and centre-loaded whips for other HF bands and will provide construc-

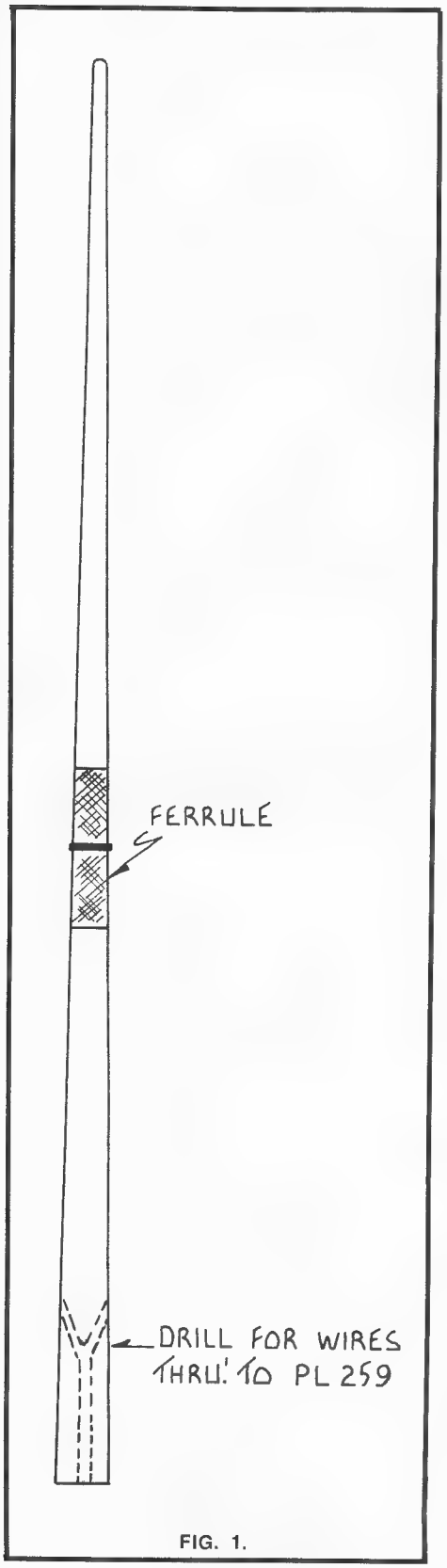


FIG. 1.

tional details when I am sure that I can cover the whole range.

So far my experience with trying tapped centre-loading coils suggests that these are best left well alone.

Thanks, Dick.

A TWO BAND MOBILE WHIP

Another interesting article appeared in a recent issue of FLUX. Unfortunately I have no indication of the author but here is the article.

A two piece 4 foot fishing rod blank was the base upon which the aerials described were constructed. These are obtainable from sports stores or the complete fishing rod can be purchased from Coles, etc., and the fittings stripped off. This base to work from should cost about $6.00. The plug is a standard PL259 UHF connector, and the base is the appropriate matching socket.

As seen in Fig. 1, a Y is drilled in the thick end of the fishing rod to take the wires through to the PL259 connector as in Fig. 2. After the leads are threaded through the end of the blank the plug is araldited to the blank.

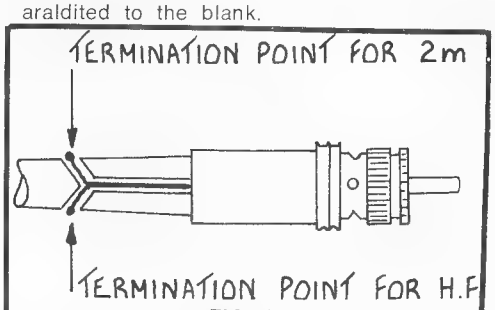


FIG. 2.

You will have noted that we said wires — plural — because we intend to make these dual purpose aerials, i.e. HF and 2m.

WIRE

The wire used was what could be called junk box wire. We obtained ours from secondhand power transformers. The wire was approximately 24 gauge. This was used for all aerials except the 80m whip which was slightly finer. This was necessary to fit the longer length of wire to be wound on the blank.

PREPARATION OF WIRE
(An important step)

Measure off the wire required. For any helical aerial the amount required is approximately ¾ of a wavelength for the frequency of design. For 80m measure off 60 metres of wire — 40 metres you would need 30 metres of wire and so on through the bands.

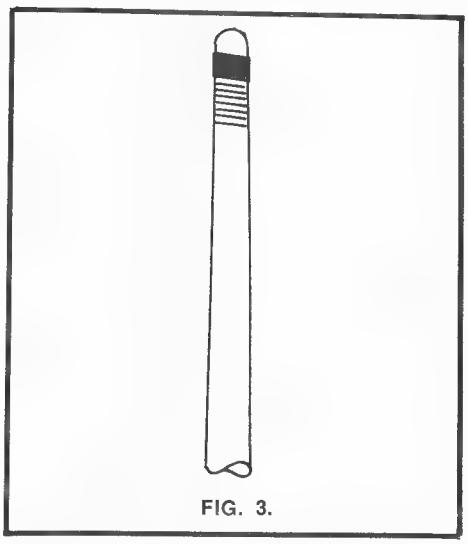


FIG. 3.

This will make the aerial longer than is necessary but it is a good starting point. If you are using secondhand wire make sure the insulation is still satisfactory and remove wax residue. This can be done by securing one end of the wire to a fence post in the back yard and with a piece of cloth wipe the whole length of wire and inspect it as you go along. The free end of the wire is cleaned of insulation for approximately 3 turns of wire. This is then tinned and wrapped around the very tip of the blanks thin end and the 3 turns sweated together, as in Fig. 3.

THE AERIAL

The wire is now very neatly close wound until the last couple of feet. The last couple of feet is fast spiral wound down and terminated on the PL259 connector or the ferrule, whichever comes first. This will depend on the wire gauge and the band that you have selected. If terminated at the ferrule the lower part of the blank is fast spiral wound (say 4 turns) and terminated on to the PL259 connector.

THE MOUNTING

This is clearly shown in Figs. 4a and 4b.

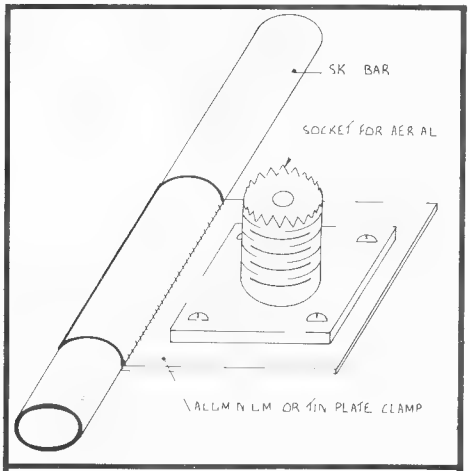


FIG. 4A.

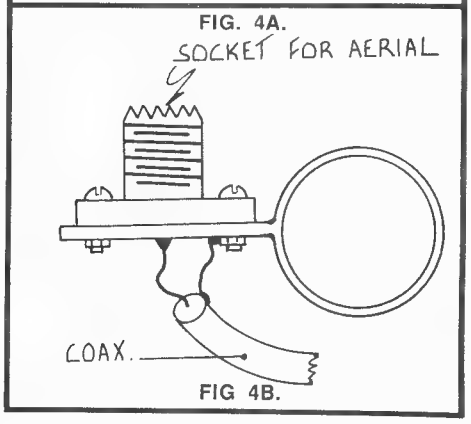


FIG 4B.

THE TUNE UP

In our case we used a FT101B and a Vicom VC2 SWR bridge. The first step is

to tune the 101 to the low end of the appropriate band and note the SWR. This could be quite high. The pruning is done from the bottom and in small steps, say 6 inches at a time. On the 80 metre aerial this is especially important as its resonant point will shift very rapidly and you may cut it too short and find yourself on the way to a 40 metre whip. When you see the SWR start to fall re-tune the transceiver to the part of the band you want your aerial to operate in and continue the pruning, with great care. If the SWR falls below 1.5, stop. At this stage you can tune the transceiver and find the actual resonant frequency and then make the final adjustments.

You thought we forget about 2 metres? No we didn't — this is the last step. As can be seen in Fig. 2 a terminating wire for 2 metres comes out on the opposite side to the HF termination. This allows the 2 metre aerial spiral spaced between the lower turns of the HF aerial. The length of this wire is approximately 20 inches to start. Trim this to suitable SWR.

FINISHING POINTS

(a) Make sure SWR bridge is set at maximum sensitivity when tuning aerial.

(b) Any protective covering put on after the tune up will have some effect on the resonant point. Clear lacquer appears to have very little effect.

(c) Paint, whether black or a colour to match your car, will have a more pronounced effect. So make sure you paint or lacquer the aerial first and leave to dry.

(d) Some type of cap is advisable at the top of your aerial to stop corona as in Figs. 3 and 5. Ball-point pen caps, toothpaste tops, etc., are appropriate.

Both interesting and informative articles I think you will agree. Next month we will discuss some of the commercially available kits for simple projects and answer the questions posed this month.

73 de VK3AFW. ■

MORSE EXAMS

Candidates for morse exams are specially reminded that the morse sending or receiving of letters is not adequate in itself. There is a space of 7 dots between words and this has to be observed so that whatever is sent or written down should be in understandable composition English. Thus, to omit a space between two words is one error. Many errors could be recorded against you if, for example, in receiving morse, you write down a string of letters not separated into discrete words. This reminder is given to dispel any rumours to the contrary and to alert candidates to the official requirements. ■

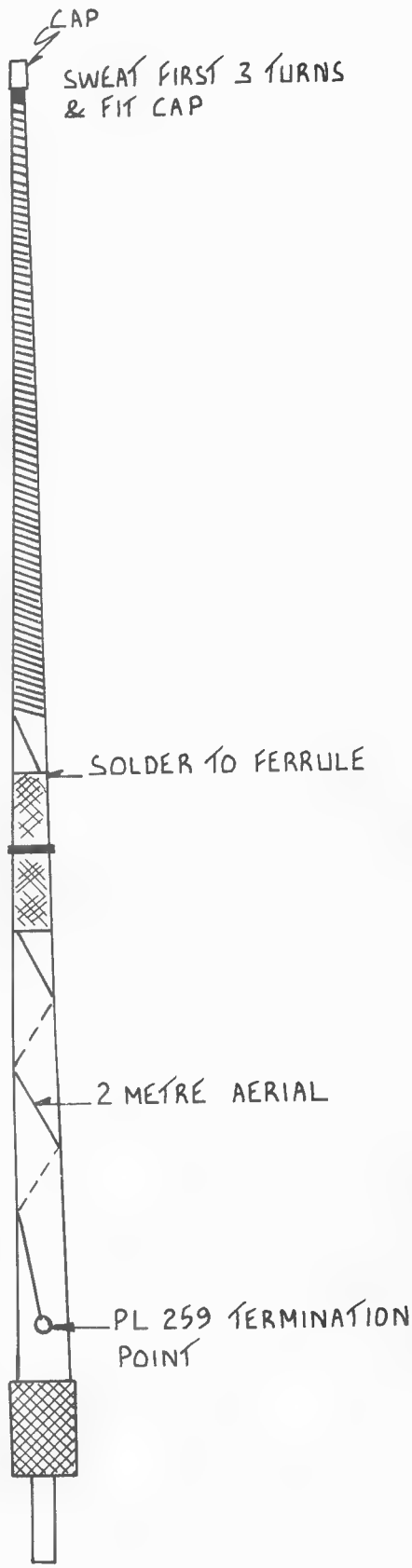


FIG. 5. The finished aerial.

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ST. LEONARDS, N.S.W. 2065

FORWARD BIAS

VK1 DIVISION

(Postal Address: WIA (ACT Division) Inc., PO Box 46, Canberra, 2600 ACT)

VK1 DIVISION

JOTA 1980

As we announced in the August issue, Jamboree-on-the-Air 1980 will take place over the weekend of 18th and 19th October. Details of the programme for the official opening ceremony, the calling freqencies and suggested times of operating for participating Scout and Guide stations appear separately in this issue.

Gus Napier VK1NBO is still anxious to hear from amateur licensees willing to help in the operation of the three official Canberra stations at Hughes, Duntroon and Page. Gus can be contacted on 82 1457 (AH) or 65 3555 (Bus.). Ken Ray VK1NDR/ZKR is co-ordinating a "talk-in" fox hunt to be held late on Sunday morning on 2 and 10 metres. Ken, too, would be most glad to hear from anyone — particularly Novices and Z calls who would be willing to help out here by taking small parties of Scouts and Guides in their cars. Ken can be reached on 88 6459 (AH) or on 65 2083 (Bus.).

CW TO THE FORE

The meeting on the 25th August again attracted a good crowd of VK1 members. About 50 turned up to hear all about "CW — From Pump-handle to Electronic Keyer". Our principal speaker for the evening gave a most convincing resume of how he finally decided to "bite the bullet" and take those first hesitant steps into the world of CW operating. The equipment set up for demonstration aroused considerable interest and more than one of the brass-pounding (10-minus w.p.m.)— this writer included — had their first tentative stabs at a high-speed paddle!

The meeting welcomed two new VK1 members — Tony Knight VK1JA, who joined the Division in July, and Al Crocker, already studying for his Novice ticket.

VK2 MINI BULLETIN

Four Pye Westminster W15Us were donated by Philips to the NSW Division late last year. Two of these are temporarily in use at Dural as a UHF repeater (one transmitting, one receiving). Two units are immediately available for sale to affiliated clubs, one country and one city. A ballot, to be drawn at the Third Conference of Clubs, will be conducted for the units. If your club wishes to be in the draw, write to the Secretary, NSW Division, PO Box 123, St. Leonards 2065.

The **Third Conference of Clubs** will be held on **Sunday, 2nd November, 1980, at Parramatta Leagues Club, 15 O'Connell Street, Parramatta.** The conference will commence at **10 a.m.** in the Casino Room and lunch can be bought at the club's bistro. Talk in directions will be given on the day on repeater channel **7000** and **28.32 MHz.** Thanks to Barry White VK2AAB of the Hornsby and Districts Amateur Radio Club for organising the venue.

The **WICEN Regional Co-ordinator's Conference** will be held on the day before the club conference, **Saturday, 1st November.** Listen to broadcasts for details of the venue. Don't forget the WICEN net on **Thursdays** at **2130h** on **3617 kHz.** Schofield's Air Show will not be held in November this year, but possibly February 1981.

Many new publications are available from the Divisional Office at 14 Atchison Street, Crows Nest, for sale either over the counter or by post. Send SASE for an updated list. The new 1980 Australian Call Book is now available for $2.95 or $4.00 posted. Clubs may purchase bulk orders at a reduced rate by applying to the Divisional Office.

News for insertion in Divisional Notes must reach **Box 123, St. Leonards 2065,** by the **1st** of the month prior to publication, e.g. by 1st November for December AR.

In each edition of AR, details of several affiliated clubs will be published. If you wish your club news to be included, make sure your club secretary has sent a club information sheet to the Divisional Office.

AVONDALE AMATEUR RADIO CLUB

Avondale College, Cooranbong 2265 (between Gosford and Newcastle).

Net: Tuesdays 6 p.m. on 21.175 MHz using either VK2BQT or VK2DFX. Classes and meetings held at Avondale College.

President: R. Drewer VK2DFX. **Faculty Sponsor:** K. Thomson VK2BQT. **Other Committee:** G. Webber VK5NEZ, K. Myers VK2BNO, R. Lowe.

OXLEY REGION AMATEUR RADIO CLUB

PO Box 712, Port Macquarie 244.

Net: Wednesdays 8 p.m. on 3.662 MHz using VK2BOR.

Meetings: January, April, July, October, 2 p.m. Saturdays, PM High School.

Classes: 7.30 p.m. Mondays, Port Macquarie High School.

President: W. Sinclair VK2ZCV. **Vice-President:** A. Monck VK2ATM. **Secretary:** L. O'Connell VK2BFP. **Other Committee:** P. Alexander VK2PA, L. Smith VK2LS, F. Gorton VK2YJU/NUG, P. Hill VK2BZA. **Newsletter:** "Oxtales", published quarterly.

WAGGA AMATEUR RADIO CLUB

PO Box 71, Kooringal, Wagga 2650.

Net: Saturdays noon on 28.49 MHz.

President: B. Grimmond VK2VKZ. **Vice-President:** A. Wheaton VK2YSU/VDF. **Secretary:** R. Read VK2AZR. **Other Committee:** R. Degabriele VK2DJQ, R. Knight VK2YPO, R. Close VK2NOC, W. Lugton.

COMING EVENTS

18th-22nd October:
Southern Cross Car Rally (Port Macquarie), WICEN. Anyone, including interstate amateurs, will be welcomed as volunteer operators. Contact H. Freeman VK2NL, (02) 665 7434, or write to Box 123, St. Leonards 2065.

25th, 26th October:
South-West Amateur Radio Society — 28th Convention. Programmes from Box 4, Griffith 2680.

1st November:
WICEN Regional Co-ordinators' Conference, Sydney.

2nd November:
Third Conference of Clubs, Parramatta Leagues Club.

16th November:
Blue Mountains Field Day.

Submitted by Susan Brown, Secretary NSW Division.

ALARA NEWS

Any YLS interested in joining ALARA, meeting other YLs sharing the common interest of amateur radio or joining in group meetings, please contact Geraldine Plant VK2NQI, PO Box 56, Kemps Creke 2171, or phone (02) 636 2414.

Submitted by G. Plant, State Co-ordinator, ALARA. ■

QRK5

A monthly transmission from the Victorian Division WIA.

Written and co-ordinated by VK3WW, QTHR.

The contest held in August was enjoyable. What a pity it could not have been held on the weekend **nearest** the 15th August — **VJ Day.**

Council meetings continue to last into the small hours of the morning. Is there anyone out there with modern management skills who can show us the way into the 1980s?? It seems certain that many otherwise able and available members will not stand for Council while the present situation prevails.

WILLY WILLY'S WORDS

Last month I promised to introduce two well known amateurs. They don't have names but serve a purpose when trying to describe a situation in which you don't want to mention real call signs. To describe a good operator we can use VK3OPR, and for the opposite use VK3LID. LID is a morse code slang term for a poor operator. I believe it originated in the USA way back. If any reader can enlarge on this I will be happy to publish the story in a future column. Of course LIDs are heard on voice also — e.g. when asked "Where are you?" answers are — VK3OPR "Mobile on my way to work". VK3LID "Left the home QTH in the car QTH on the way to the work QTH". The use of Q signals on voice is accepted but not when they are meaningless.

INCENTIVE LICENSING
This subject is getting yet another airing. What do you think? Should the new bands be available only to those who do higher grade exams? Should existing bands be chopped up so that existing privileges are reduced and then restored after passing more theory, regulations and morse?

Is this form of status seeking compatible with the attitude of the majority of VK amateurs? Finally, would incentive licensing be beneficial to amateur radio in Australia?

Please think about these questions — remember, silence is taken as assent. Voice your opinion through your councillors or in letters to the editor. Your opinion counts.

A BUDGET LEAK??
VK3 amateurs must face the possibility of a fee increase. Do you think the Division is comparable to a union or a professional association? Do you think economics could be achieved by more efficient management at Divisional and Federal level?

Do you believe that the facilities provided at present are worth more to members but should remain free to non-members?

Please make yourself heard on these matters — we do not want to lose members through ill-advised action.

KNOW YOUR COUNCILLORS
VK3SS KEITH SCOTT
First licensed in 1937, he did the mandatory six months using morse code (some of the old ideas might be worth reconsidering).

A two valve re-gen Rx and a modulated oscillator provided his first voice contact with VK3PR in Leongatha. Keith served with Army Sigs for 4½ years then set up his own business in radio sales and repairs. He has been actively engaged in zone and club activities for over 30 years, particularly WICEN. Keith lives at Maffra and travels 400 km each month to attend Council meetings.

VK3JN PETER DURY
Now in his second term of office, Peter has the very demanding task of Treasurer. Peter is a radio trades teacher and when not teaching apprentices and amateur classes likes to build and operate equipment. Lately he has been exploring RTTY. He also likes boating and fishing, and enjoys degassing the odd 807 (his friends attend to the even ones).

That's all regarding Councillors. After a three month wait it is obvious that the rest are not prepared to support this column with a short contribution.

WHITE ELEPHANTS
Saturday, 23rd August, saw a very successful white elephant day. Bargaining in the morning and an auction after lunch. No it's not true that Harold auctioned his own walking stick. A well run popular event — general opinion "More please".

ON REPEATERS
Users are reminded to leave at **least** two seconds before transmitting — give everyone a fair go.

NEWS ITEMS
The following were given to me on 23rd August. Written by one person but unsigned:—

25-26 October — South-West Amateur Radio Society Convention. Contact John Chandler, PO Box 4, Griffith 2680. Interest in cloth badge similar to calf badge. If warranted will produce for $1.50 approximately.

There was also a note regarding an event in July — Contributions are welcome but please sign and address them just in case some clarification is needed.

QUESTION OR ANSWER?
Regarding question 2 in the August column it has been suggested that they prefer base loading!

All VK3 contesters were pleased to hear VK3WI, VK3AWI, VK3BWI and VK3ZWI active on 2m during the August contest. Sincere thanks to all who gave of their time to make this possible.

HELP NEEDED
Can anyone help with details of modifications to the Yaesu FT7? I have had requests from all over the country, so all letters will be acknowledged in this column and passed on to the technical editor. Please answer direct — QTHR.

LIBRARY NEWS
Thanks to the generosity of VK3YTC the library now holds workshop manuals on the commercial equipment listed below.

It is hoped that Council will approve a lending system already submitted so that members can use these books. STC CTR50-128A, 132-MTR25-121, 131, Philips AM1676-TCA 1649A, 1674, Vinten MTR 19 and 20, BTR 19 and 20, AWA MR6A, BS6A, MR15A, BS15A, 60A, Collins 32 RS-IC, Serviscope S32A.

NEW TO COUNCIL
Welcome to Kevin VK3YPL, who was elected at the August meeting. Appointed to ex-officio positions at the same meeting were John VK3VQV (Minutes Secretary) and Rob VK3YMU (Disposals Officer). Their ability and willingness to help is appreciated.

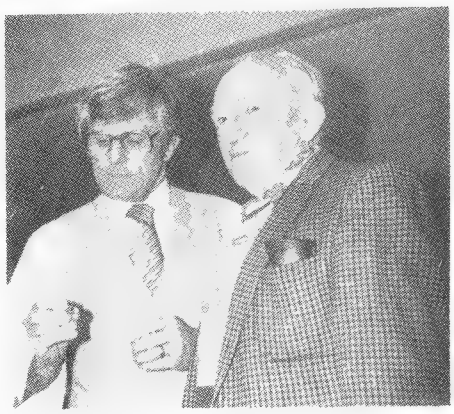


PHOTO 1: Eric Trebilcock (r) receiving his badge of Honorary Life Membership. At left is Eric Buggee.

2m FOXHUNT
The winner of the August 2m fox hunt was Ewen VK3BMV. Ewen also won the Vicom Competition for the best performance in the series. The competition had tied the previous month with VK3BMV, VK3BNK and VK3ZXW equal. However, the August hunt broke the tie and Ewen won the competition.

The prize was presented at the September meeting of the Victorian Division.

Finally a farewell and a welcome. Cheers Eric Trebilcock, and thanks for your 20 or more years service in running the inwards QSL Bureau.

Welcome Barbara VK3BYK. We hope you enjoy the job appreciated by many amateurs.

Until next month.

73. Mike VK3WW. ■

AMATEUR QRM RADIO

Bulletin issued by the North, North West and Southern Branches of the Wireless Institute of Australia, Tasmanian Division.

TASMANIAN AR CONVENTION

VENUE
Penguin High School, Ironcliffe Road, Penguin.

DATE
November 22nd and 23rd, 1980.

REGISTRATION FEE
A fee of $1.50 per adult (children free) will be charged at the door and on payment of same you will be supplied with a TARC 1980 name tag which enables you to receive morning and afternoon tea free of charge. If accompanied by your children cordial would be available to them.

Catering is supplied by the Penguin Community Group (Penguin High School P and F Association) at very reasonable charges and will serve Saturday lunch and Sunday lunch at the High School for those who are registered, so make sure you have a name tag.

SATURDAY LUNCH of soup, sandwiches and coffee or tea or cordial will be available from 11.30 a.m. to 1.00 p.m. to registered members only.

SUNDAY LUNCH will be smorgasbord style and will be served in a closed area of the school from 12 noon to 1.30 p.m. Advice of your attendance to this function is required in advance for catering reasons.

Saturday evening dinner dance will be held at the Penguin Sports Club, which is adjacent to the High School. This Club is licensed, hence drinks are not included.

There is ample room for dancing, a band will be in attendance, but rag chewing is encouraged! lucky door prizes, too.

ACCOMMODATION

Limited hotel accommodation is available at Penguin and there are three motels in Ulverstone, hotels and caravan parks. If you require a booking or help with same, please contact Joan Fudge on 25 3770 (area code 004).

Again this year TARC will be open to the public on Saturday afternoon and Sunday morning. Registered members and families enter free. Entrance fee for public is $1.00 per adult, children free.

Name tags are important so make sure you have one.

CLOSING DATE for bookings to functions is 10th November, 1980.

RATES

(a) Registration: $1.50 adult, $1.00 per adult paid in advance, children FREE.

(b) Saturday lunch: $1.50 per adult, $6.00 per family, paid in advance; K2.00 per adult, $7.00 per family at the door.

(c) Saturday evening: $9.00 per single, $18.00 per double, $23.00 per family (must be paid in advance).

(d) Sunday luncheon: $45.0 per adult, $11.50 per family (must be paid in advance).

Late registrations, etc., will be received but a penalty of 50c per person will be charged.

For further information contact the N-W Branch of the WIA (Tasmania Division), Box 194, Penguin 7316.

Applications for TARC must be in by NOVEMBER 10. ■

JOINT WIA-P & T MEETING

A meeting between Divisional Council and P and T officers was held on August 15th. P and T were represented by the Superintendent, Mr. H. Melling, and Mr. D. Thorne. This is the first occasion that a Superintendent has attended such a meeting and we certainly thank both these people for making time available for this meeting.

Mr. Melling stated that he welcomed meetings with the WIA, and agreed to participate in such meetings at, say, three-monthly intervals. Further he was keen to be invited to Branch meetings or executive meetings when they happened to be in that area.

Changes to the recently produced handbook were a matter of concern. Council asked if a list of these points could be promulgated in writing. For instance the relaxing of third party privileges meant that permission for WICEN type exercises is no longer required. The superintendent noted however that they would prefer to be informed about the use of prime sites on such occasions in case interference to essential services should result.

The need to request permission to use WIA sponsored repeaters for special tasks was questioned and this led to the comment that perhaps some of our requests are a little too restrictive.

The problems of isolated amateur observers were outlined and it was stated that P and T officers handled this work in areas where the WIA did not offer assistance. P and T are not worried about this aspect at the moment.

Examination sessions are under review and although the situation in Hobart is unlikely to change in the near future, "on call" exams in other centres are likely shortly. When a field officer is in the area he may be able to hold such an examination. A centre is to be established at the Launceston Maritime College and this will be available for amateur exams.

The shoddy look of the new licence was mentioned, however it appears this is necessitated by the "over the counter" system.

PLEASE, if members have problems let your Council members know so that your ideas can be discussed at these meetings. We are most fortunate to have this avenue available.

From "QRM", September 1980, Vol. 10, No. 8. ■

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250

In the course of listening on the short-wave bands amongst the many transmissions heard, I have come across programmes from radio stations doing clandestine broadcasting. These stations present programmes that ordinarily would not be aired by the conventional organizations because their content reflects the views of either minority or dissident groups within a specific region or nation. Their transmissions are usually based from a neighbouring country which is sympathetic to their cause for various reasons. These host countries often grant the use of facilities of their domestic networks to carry the programmes.

Clandestine radio broadcasting began in Europe during the thirties during the ferment leading up to the Second World War. These broadcasts mirrored the political and idealogical conflict of the period. The Spanish Civil War saw it being used quite extensively by both sides. For about 30 years after this conflict ended, a programme was presented by the defeated supporters beamed to that region from bases within the Soviet Union.

During World War 2, the utilization of clandestine broadcasts was actively employed by both Axis and Allied Governments. With the cessation of hostilities in 1945, the tensions and turmoil increased and this period became known as the Cold War. This ushered in intense activity by official and clandestine outlets.

In the mid-fifties, a powerful station, Radio Free Europe/Free Liberty commenced broadcasting to the Eastern Bloc from West Germany and Portugal. It carried programmes for emigre and dissident groups within that region, and was backed by the American CIA. Today this station still transmits although its frequencies are registered and it is funded from the United States Treasury through an allocation to the "International Committee for External Broadcasting".

Because the programme content did not please the authorities within the target areas, their transmissions were subjected to heavy jamming, a situation that continues up to the present. Frequently, the forms of jamming consist of over-modulated narrow-band FM signals, usually from one of the domestic network programmes and transmitted from several sites simultaneously. Also "white" noise is emitted at about 200 per cent modulation, which effectively blocks the transmissions. There have been estimates of several thousand transmitters employed exclusively to jam out any unwanted programmes at a cost estimated at four times the expenditure employed to present the programmes.

Identification of clandestine radio stations is made difficult due to the use of unfamiliar languages and dialects. A few have English programming, such as the Voice of the Malayan Revolution on 15780 kHz. QSLing these stations is very hard as no addresses are given, nor do the host nations acknowledge their existence. Radio Free Europe/Radio Liberty will acknowledge reports, that is if you can catch the signals through the heavy QRM.

Most clandestine activity today is centred around the Middle East. There are reports that seven to eight transmit to Iran alone. These transmissions provide a fascinating insight into today's fast changing world.

HANDICAP AID PROGRAMME

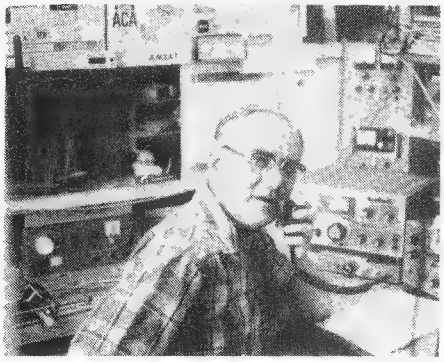
1981 has been designated by the United Nations as the International Year of the Disabled. Many activities are planned for this to promote the cause of the disabled and handicapped, both here and overseas. In many countries there is an organization that is encouraging short-wave listeners and other related activities such as amateur radio by individuals with handicaps or disabilities. I know of many persons who actively pursue SWL DXing despite severe

disabilities, such as Joachim Wolff of Mitchell Park, South Australia. John is a quadraplegic and is totally bedridden. But despite this, he is active monitoring the short-wave bands and has written an article on modifying the Barlow-Wadley XCR-30 for visually handicapped operators.

I have accepted an invitation of the Southern Cross DX Club of Adelaide, SA, to be National Co-ordinator of the Handicap Aid Programme in Australia. I hope that this will be established on a firm footing in the very near future. I would be pleased to hear from any interested persons or bodies prepared to assist in any way. It would help if an SASE could be included. I hope to have further news on the Handicap Aid Programme in the future.

If you have any news of loggings that you could share, I would like to hear from you. Until next month, 73s, Robin L. Harwood. ■

AMATEUR SATELLITES



R. C. Arnold VK3ZBB

Several interested amateurs have asked me to repeat the telemetry decoding information for AMSAT OSCAR 8.

Data is sent on 29.402 MHz for Mode A and 435.095 MHz for Mode J in six groups of three figures — this sequence is concluded by HI.

The first digit in each group gives the channel number and the following two digits is the "Number" N, referred to as follows:—

Channel 1:
Total Solar Array Current —
$I t = 7.15 (101 — N)$ mA
— if N is 60 (received as 160) $I t = 293$ mA

Channel 2:
Battery Current —
$I b = 57 (N — 50)$ mA
— if N is 50 (received as 250) $I b = \pm 0$ mA

Channel 3:
Battery Voltage —
$V b = 0.1N + 8.25V$
— if N is 50 (received as 350) $V b = 13.25V$

Channel 4:
Baseplate Temperature —
$T bp = 95.8 — 1.48 N°C$
— if N is 49 (received as 449)
$T bp = 23.3°C$

Channel 5:
Battery Temperature —
$T b = 95.8 — 1.48 N°C$
— if N is 47 received as 547)
$T b = 26.2°C$

Channel 6:
RF Power Output (Mode J) —
$P jt = 23 N$ mW
— if N is 23 received as 623)
$P jt = 529$ mW

NOTE: On Made A Channel 6 is sent as 601 or 602, which means zero output.

A warning from AMSAT. If you want to keep our present satellites operating until the next OSCAR is available — at the earliest 1982 — **DO NOT USE TOO MUCH POWER.**

If your downlink signal is stronger than the beacon, you are using excessive power. You can overcome your problem of weak receive signals by improving antennas, using low loss coax and a low noise front end. Keep an eye (or ear) on overloading your receiver front end by your uplink signal — desensing should be avoided.

The French amateurs led by F8ZS are constructing a satellite to be known as ARSENE. It is hoped that this satellite will be launched by an ARIANE vehicle in 1983-84.

The International meeting I was hoping to attend in September has been postponed until May 1981.

Rumour has it that the Russian satellites will not be launched until 1981.

The Mode "J" Club now has 137 members from nineteen countries.

AMSAT OSCAR 7 is now out of shadow as far as Australia is concerned and it is now back to its original routine of Mode A and B on alternate days. Operations are very satisfactory, particularly when the total input power level is not too high — a good sign of overloading is evidenced by higher than average noise levels and spasms of oscillation.

New stations heard include VK2ADJ, VK2ZHR and VK4RR.

The registration of the trade mark AMSAT and its symbol, which was first taken out in 1973, has now been transferred to the Wireless Institute of Australia. This will mean that only persons authorised by the Institute can use this trade mark in Australia. ■

BUYING OR SELLING GEAR?

HAMADS

MAKE IT HAPPEN FAST

ARTIFICIAL SATELLITES

During 1979, some 130 satellites were launched according to recent ITU publication. The USSR were responsible for about 70 per cent of the launchings, the remainder being USA, Japan, India and UK.

The frequencies employed were mainly in the GHz bands, however it is interesting to note that VHF (137 MHz) band is still used, and even more surprising HF around 20 MHz.

Purposes varied considerably. Many were for basic scientific research and had a limited life — weeks or days. However, it is interesting to note the large number that fit into the "high resolution reconnaissance" category.

The ITU publication includes spacecraft amongst its satellite listings.

SOYUZ-32

An example is Soyuz-32, launched by the USSR on 22nd February, 1979. Its description was:—

3-part spacecraft: 2 spherical habitable modules (orbital compartment and command module) connected in tandem to a cylindrical service module; diameter: 2.70m; height: 7.10m; mass: 6680 kg; 2 solar arrays.

Its purpose was given as:—

Two-man spacecraft: V. Lyakhov, flight commander; V. Ruymin, flight engineer. Docked with Salyut-6 (1977 97-A) on 26th February. On 1st March Soyuz-32 was used as a locomotive to transfer Salyut-6 into a higher orbit (308/328 km).

After undocking, Soyuz-32 was returned to earth unmanned on 13th June, 1979.

SAGE

Four days earlier the USA launched a research satellie, SAGE.

3-axis stabilized spacecraft; 6-sided prism shape; height: 0.64m ;mass: 147 kg; 2 solar panels.

For the purpose of stratospheric aerosol and gas experiment. Objectives: To obtain global data on stratospheric aerosols and ozone during at least one year. Carries a 4-spectral radiometer to measure solar intensity attenuation after sunrise and before sunset in wavebands centred at 0.385, 0.45, 0.6 and 1.0 um.

There were also, of course, communication satellites, navigation satellites and meteorological satellites. There were, unfortunately, no Oscars that year. ■

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VHF/UHF BEACONS

Freq.	Call Sign	Location
50.005	H44HIR	Honiara
50.020	GB3SIX	Anglesey
50.023	HH2PR	Haiti
50.025	6Y5RC	Jamaica
50.035	ZB2VHF	Gibraltar
50.036	HC1JX	Quito
50.038	FY7THF	French Guiana
50.040	WA6MHZ	San Diego
50.048	VE6ARC	Alberta
50.050	ZS3E	South West Africa
50.055	ZL1UHF	Auckland
50.060	PY2XB	Sao Paulo
50.070	YV5ZZ	Caracas
50.070	VP9WB	Bermuda
50.080	W1AW	Connecticut
50.080	TI2NA	Costa Rica
50.085	WA6JRA	Los Angeles
50.088	VE1SIX	New Brunswick
50.089	WD4CEI	North Carolina
50.100	KH6EQI	Pearl Harbour
50.104	K4EJQ	Tennessee
50.105	KC4AAD	McMurdo, Antarctica
50.110	KH0AB	Saipan
50.110	AL7C	Anchorage
50.120	4S7EA	Sri Lanka
50.144	KC6NI	Ponape, Caroline Is.
50.498	5B4CY	Cyprus
51.999	YJ8PV	Vanuata
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.400	VK7RNT	Launceston
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.500	ZL2VHM	Palmerston North
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
52.900	VK6RTT	Carnarvon
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144.162	VK3RGI	Gippsland
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
144.900	VK7RTX	Ulverstone
145.00	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane

No beacon changes this month. As this month of October will probably be the only chance we will have to work any stations outside Australia with the decline in Cycle 21, it is proposed to remove from the beacon list most of the overseas beacons and revert to the usual VK and near countries beacons. It may be useful for you to have a quick check list available so may I suggest you run the beacon list through a copying machine, and hang this last list on your shack wall. If it doesn't do anything else it will be a reminder to you of what areas you didn't work during Cycle 21!

MELBOURNE NEWS

Gil VK3AUI wrote to say August was a very quiet month, but some improvement in July ZL TV frequently heard. Brief opening to VK on 6/7. Contacts to ZL on 27/7, also to VK4AMF, VK4ANC, VK2YRL, VK4ZFZ from 0535 to 0617Z. KH6EQI beacon heard 0725 to 0745Z. At 0835Z heard JA2BZY in contact with YJ8PD on 50 MHz, but band did not open on 52 MHz. On 20/7 ZL2CD was hearing the VK2 beacon.

Thanks, Gill, if its' been quiet in Melbourne it has been even quieter in Adelaide!

SOUTH-EAST RADIO GROUP

This active band of people at Mt. Gambier are not letting the grass grow around their feet.; Their new President is Garth VK5AGO, Secretary Len VK5ALC. The SERG Newsletter has been rejuvenated and the first copy has arrived on my desk. The Club has also put machinery in motion to become an incorporated body which will give them the legal protection required.

Of course the outstanding piece of news (!) is their appointment of me, your scribe, VK5LP, as the Club Patron at the same salary as the former Patron! However, to be serious, on behalf of my readers, I wish the Club well, and hope their moves for improvements will be realised. And I did appreciate being asked to be Patron, as I have always had a very soft spot in my heart for the boys in Mt. Gambier.

Possibly by the time you read this the SERG will have commenced its **South-East Area Net on 3586 kHz** ± QRM and through the **Channel 6 repeater,** and if you care to join in the evening's proceedings you will be welcome to participate.

Peter Becker VK5ZBF is the **Club Publicity Officer,** and his address is **6 Pigeon Street, Mt. Gambia 5290.** What an appropriate address for a publicity officer!

And while talking about nets, do you know the **Illawarra Amateur Radio Society** conducts a **CW net** on **28.460 MHz** on **Tuesday nights** at **1000Z,** and they hope to provide an opportunity for those wanting to gain confidence in CW without noise, QRM and overcrowding of other bands.

MICROWAVE REPORT

Lyle VK2ALU in **"The Propagator"** reports a six foot diameter dish has been obtained for use at 10 GHz. The gain is 45 dBi at this frequency and will give an ERP of approximately 300 watts from the 20 mW source. This dish will also be useful at 23 cm as it has a gain of 27 dBi at this frequency. It is intended to use it as part of the radio telescope system on 23 cm.

It is also noted that the foundations are being dug for the re-installation of the 432 MHz EME dish at its new site, so we all wish the project well.

Also noted in "The Propagator" is that from **Sunday, 17th August,** the **Sunday night net** will be tried on **3565 MHz ± QRM,** starting **1000Z.** It is hoped this change will give a wider coverage and allow others outside of Wollongong to participate.

THE CENTIMETRE BANDS

The microwave bands are commonly misbelieved to be limited to "line-of-sight" applications. However, the bands over 1 GHz are useful not only for space communications, but also for terrestrial use and well beyond the horizon.

In the 10 GHz band, low power unstable free-running oscillators and "noisy receivers" with 1 MHz passbands have permitted communications up to 500 km on sea and over 350 km on land. These figures do not consider communication between portable stations located high on mountains, but sea-level locations whose horizon is only 20 to 50 km.

There is reasonable hope that these bands, several MHz wide, may become available for regular medium distance communications when amateur techniques shall be improved to a level similar to standards on VHF.

Improvement to receiver sensitivity depends mainly on the transmitter stability; but the "frequency jitter" originated by crystal oscillator multiplication is so far one of the important obstacles.

According to statements by G3RPE, with little improvement of the current techniques, reduction of the receiver passband and the use of an efficient antenna such as a paraboloid 180 cm in diameter, regular communication up to 400-600 km by means of tropo-scatter may become a reality.

The basic conditions for scatter communication at amateur level in the centimetre band are: 2 kHz of passband in the receiver, and 180 cm paraboloid reflectors at both ends. Then the standard conditions become:

1.3 GHz band, 40W output = 16 kW erp — distance 600 km.
2.3 GHz band, 30W output = 30 kW erp — distance 500 km.
5.7 GHz band, 2W output = 10 kW erp — distance 400 km.
10 GHz band, 1W output = 16 kW erp — distance 400 km.

We cannot risk to lose such a powerful medium for communication which may accommodate thousands of new amateurs, only because many of us do not rely enthusiastically enough on it. Re-printed from "The Propagator", July 1980.

MAGNETIC SUPERSTORMS

A new class of "super magnetic storms" will probably strike earth in the next few years, causing unprecedented disruptions in power transmissions and operations of computers and telecommunications, predicts a National Oceanic and Atmospheric Administration scientist. Howard Sargent of NOAA's Space Environment Services Centre, Boulder, Colorado, says superstorms, which set up currents in power lines causing overloads and cut-offs of power, tend to occur after the peak in the sun's 11 year sunspot cycle. They are especially likely in odd-numbered, active cycles, he says. The sun is now just past the peak of a particularly spotty cycle, Cycle 21. Evidence shows that a series of August 1972 storms, which ranged 220 on an index where a major storm rates 100, could be "weaklings" in comparison! — From WA VHF Group Bulletin.

SIX METRES v. ETHNIC TELEVISION

I had quite a lot to say a while back on the subject of VK amateurs being allowed to use all or some of the 50 MHz band, particularly during the peak of Cycle 21, but this fell on deaf ears with the result we in Australia missed many contacts which otherwise could have been made. Overseas reports seem to indicate a few VK stations couldn't resist the urge to make some illegal contacts, but I am proud to say the vast majority of those who were sufficiently interested or motivated to keep up band activity at the right times did operate legally, and our standing is all the better for such compliance. From my own observations of six metre band activity I can only say I was very pleased and happy to have worked as many countries as I did, and to share with my fellow amateurs the associated pleasures which stem from making good long distance contacts along with the other stations on the band at the time, the sharing of contact time with overseas stations, with your neighbours, and so I could go on.

I am sure we were all very thrilled for our colleagues in VK3 when Channel 0 closed down and they had an opportunity to work DX without the trauma of TVI, even though most of the best contacts had already passed. But it was a step in the right direction, and we have always hoped our friends in Brisbane and Wagga would also eventually be able to share in the jubilation.

At the same time we rejoiced to hear from official quarters that the use of Channel 5A was to be phased out, and with it a consequent reduction in QRM on 144 MHz, although it appeared as though it was too late to prevent a high powered Channel 5A from being completed in the Hamilton area, right in Steve VK3OT's country! More on this a bit further on.

But back to Channel 0. That new era enjoyed by Melbourne amateurs looks like being rather short if one cares to read what is currently being said about Ethnic Television in Australia. It was only a brief period after the closure of Channel 0 before Mr. Staley, Minister for Post and Telecommunications, released news of the proposed Ethnic Television Service, and the likelihood Channel 0 would be used to establish it! Whilst it was bad enough to have a few high power Channel 0 stations throughout the country, but if all areas (i.e. principally capital cities for the time being) are to be provided with Ethnic Television, it will not be hard to see what the future of the six metre amateur band is going to be if we finish up with Channel 0 transmitters of 2.5 kW and 5 kW plus antenna gain, as the case may be, in every State of Australia.

I would like to make it clear at the outset I am not against Ethnic Television, but I am against the method of approach to its introduction. Good cases have been made out in the past for moving into UHF television, and this will need to be done ultimately anyway. The vast majority of owners of colour television sets are already provided with the means for reception of UHF television, with the UHF tuner already in the set. It is only some of the older sets which do not have this inbuilt provision, but all have a means by which conversions can be made if necesary. I service television sets, so I do know a little about what I am saying.

If we can believe Mr. Staley the use of Channel 0 is to be on a temporary basis only, with later transfer to UHF. But then again several years ago we were told the 27 MHz band would be evacuated by the Citizens Radio Service in 1982, as it was only a "temporary allocation" until users could be shifted to UHF! P. and T have as much hope of clearing the band of CB users in 1982 as they have of clearing up all their cases of TVI reports by then! From an engineering point of view once a service is operating pure economics dictate the need for at least 10 years operation to make the proposition viable. And so it will go on, Cycle 22 will be here in 1990 and the Channel 0s will be still going fine, thank you!

To have a chain of Channel 0 transmitters across Australia is going to create a pattern of mutual interference during periods of Es activity in the summer time, Adelaide will nicely interfere with Brisbane and Sydney, Melbourne will land in Brisbane nicely as it does now, Hobart also will look into Adelaide, Sydney and Brisbane, whilst Perth will be able to take its pick and land anywhere in the east.

There has been talk of running a parallel service eventually with Channel 0 and UHF simultaneously whilst viewers are given time to get their sets tuned or purchased for UHF. What a costly exercise! Through my considerable contact with the general public, right in their homes, as a TV serviceman it seems to me most homes see the need for a colour TV set as a necessity, and will go without many other goods and chattels in order to place a colour TV in the lounge, and I will take a lot of convincing that the financial position of most families is the prime consideration when the decision to purchase is made. Most homes will already have the UHF facility available, the only outlay in the main will be an additional antenna, and in some of the better areas even the VHF antenna will provide enough UHF signal. If Bill Smith has Ethnic Television and Tom Jones has not, then the $100 which might be required to get the Jones's older TV on to UHF will be found somewhere. Most homes have good modern cars in their garages as well as colour TV, so why all the talk about parallel services. Vote catching perhaps? Anyway, once you start any form of parallel service practically all incentive is lost to make changes which ultimately are in the views' best interests, some will plod along using the VHF service year after year, and they will never be using UHF unless forced to do so, so let's start right at the beginning and ensure that the Ethnic Television Service is given a good quality outlet on UHF instead of an obsolete service on the interference prone Channel 0 allocation.

CORDLESS TELEPHONE EXTENSIONS

And did you stop to read Mr. Staley's warning last July on the subject of those cordless telephone extensions, when he advised the articles presently being sold are illegal, and already causing interference to other services, particularly in Brisbane because of Channel 0 operation there! That means they must be transmitting very close to the 6 metre band, too, so more problems. Referring to the interference in the Brisbane and Gold Coast areas due to the use of these phones, Mr. Staley also said "The Channel will soon be used in Sydney and Melbourne for multi-cultural broadcasting services". That means Channel 0 by any form of reasoning, so the writing is on the wall, fellow amateurs.

I can only hope the VHF Advisory Committee of the WIA will have noted this, and that we can soon have some concrete evidence that the WIA has and is continuing to voice its concern.

And on top of all these things happening to the amateurs, I am now told an FM station operating in Sydney has its subharmonic on 52.050, thank you very much, thus effectively blanking out the 6 metre calling frequency for that area!

As amateurs, I don't think we should set out to paint a too selfish image of ourselves, and want everything our own way. But it seems in the total picture of things, we don't ever get asked for an opinion, we have to take what we get, like it or lump it. We have had to endure listening to many 50 MHz DX signals during the past two years in particular without being able to contact the stations concerned because we adhered to our allocation 2 MHz higher; amateurs in Mel-

bourne and Brisbane have virtually had to go off the air or risk the wrath of neighbours and officialdom due to TVI, or if lucky enough not to worry the neighbours, have had to endure countless birdies on the band due to rubbish from the TV stations themselves.

Those who might conceivably answer the question at official level, and one I have often asked, but which so far has been totally ignored, is why the USA, with its vastly greater population than our own, has been able to fit in all its TV stations, FM stations, VHF and associated services, three amateur bands (50 to 50 MHz, 144 to 148 MHz, and 220 to 225 MHz), in the same spectrum area as we have, yet hasn't found the need to use a Channel 0 or 5A allocation.

My spies tell me, too, that NEC transmitters have been purchased for the Ethnic Television Service and are in Australia for use in Sydney and Melbourne, and the newspaper date says 24/25 October. So there!

THE CHANNEL 5A SITUATION

Is it correct that ABC4 in Gippsland could well finish up as another Channel 5A, despite all the official promises to phase out the frequency? I am also told there are two high power Channel 5A transmitters still to be used somewhere in Australia, two are already destined for Hamilton, one for use and one for spare I suppose.

All this is alarming enough, especially in the light of the Minister's statements that there will not be any more 5A stations. Yet when the present plans are all brought to fruition, it seems like 5A will quite effectively stamp out 2 metre operation in Wollongong, Newcastle, Hamilton, Traralgon, Berrie (SA), Northam (WA), not to mention the low power translators at three locations in Central NSW, plus Cairns, Gympie and Alexander. This makes no account of the off-air translater receivers which will be nicely affected by amateur transmissions in the 2 metre band.

So much for WARC 79. What did it achieve? Very little if officialdom continues to openly and flagrantly escalate the operation of non-standard television channels such as Channel 0 and 5A.

WHAT CAN WE DO?

Since preparing this article several weeks ago after reading Mr. Staley's comments in the press, I have received my copy of ARA and I would go on record as supporting Steve Gregory VK3OT in his comments there on the Channel 0 and 5A situation. If you have something to say or can help in some way I suggest you write to either of us, outlining your views, as it is a matter of considerable concern to us, and in my own selfish way I am going to miss those 2 metre contacts into Western Victoria which have been a feature of my contacts for many years, because once Channel 5A gets going at Hamilton there will be no more 2 metre contacts to that area.

I feel sorry in one way to have had to take so much of your time in having this matter aired again, but if I don't get up and say something I am accused of being too complacent, and when I do say something I am accused of stirring, so what does one do? But lack of other news this month has given the opportunity for something to be said anyway.

Despite everything which has been said, I am sorry to see Mr. Staley leaving the cause. I feel he has been able to lend a sympathetic ear to these problems, ones which probably he himself hasn't been able to spell out the answers, which at times are probably prepared by others anyway.

VHF FIELD DAY

To change the subject, might I again remind you of the proposed VHF Field Day for the weekend of 6th and 7th December, and being sponsored by the Geelong Amateur Radio Club. I hope to have full details next month. In the meantime might I respectfully suggest as many of you as possible go out on this Field Day and perhaps the next one, as these may be the last chances you will have to enjoy the activity which can be provided by the VK3 stations on 2 metres, after that they will probably be effectively silenced by Channel 5A at Hamilton. So make the most of it now!

TECHNICAL TIP

In a brief way I would like to try and include a small segment in this column each month now that DX is declining, detailing a hint or kink which might just make your life that much easier at some time or other. All such suggestions will be VHF or UHF orientated.

I would like to start this month by giving you a hint which I have used for a number of years when constructing my VHF antennae. This hint can apply to 52, 144 and 432 MHz yagi type antennae. If you use those black or grey plastic insulators for attaching the elements to the boom, this generally requires you to drill a hole through the element on each side of the boom, or in some cases, a bolt goes through the centre of the element, down through the centre of the insulator and the boom all in one operation. If something should strike this element, e.g. a flying bird rising upwards particularly, it is quite possible for the element to be snapped in halves right at the centre bolt mounting.

To prevent this, I slightly roughen the outer edges of the insulator and, after mounting the element in the usual way, run the usual slow setting Araldite along each side of the element where it touches the insulator, which when dry effectively gives a supporting area several inches long on each side of the boom, so that a bird collision will at worst bend the element slightly, but will not allow it to break. Should you have to replace the element you will find that a fairly high degree of pressure with your hands will break the Araldite away from the insulator, as the two do not combine really perfectly, but sufficiently to make a very strong joint. Try it.

Closing with a thought for the month: **"We probably wouldn't worry about what people think of us if we could know how seldom they do."**

73. The Voice in the Hills. ■

Youth Radio Clubs Scheme of Australia

VICTORIAN DIVISION

The Youth Radio Clubs Scheme of Australia was formed almost thirty years ago to develop in young people and others an interest in radio and electronics. It also provides an interchange of information between school clubs. Among its activities are:—

Issue of a quarterly magazine, "Zero Beat", which gives news of club activities, study material, projects, particularly for beginners and those with limited finance, and news of meetings, classes, rallies, and so on.

Provides speakers to visit school clubs, and other organisations to give information and advice. Also advises club and other leaders as to how to organise the club and what projects might be suitable.

Technical assistance with any projects which fail to work and which the club or group cannot get going.

Supplies excellent text books written by members of the YRCS on basic electronics, logic and computer principles at a very low price to club members and individuals registered with the YRCS.

Provides components when these can be obtained at a fraction of the normal price. From time to time lists are sent to clubs and to registered members.

Holds examinations and provides very attractive certificates to all registered individuals and club members who pass. This, while not "official", has in the past proved of considerable help in getting a job in electronics. There is no extra charge for these services.

Registration for clubs and individual members is $10 joining fee and $10 per annum. This includes a copy of the magazine "Zero Beat".

The Victorian Division Supervisor is Roy Hartkopf VK3AOH, QTHR, and all enquiries should be directed to him. ■

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4.08	1	8	3	No. 3014	$1.90
4.16	1	16	3	No. 3015	$1.90
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5.16	1¼	16	4	No. 3019	$2.10
8.10	2	10	4	No. 3907	$3.10

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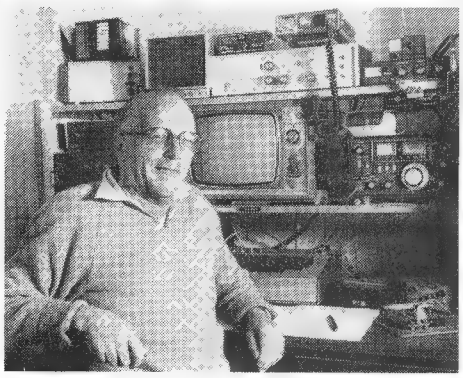

October:

4/5	VK/ZL/OCEANIA PHONE CONTEST
11/12	VK/ZL/OCEANIA CW CONTEST
18/19	CARTG RTTY*
18/19	JAMBOREE ON THE AIR
25/26	CQ WW DX PHONE CONTEST

November:

1/2	I DIPLOMA "GRAN CANARIA PERLA DEL ATLANTICO"
8/9	EUROPEAN RTTY*
8/9	INTERNATIONAL POLICE CONTEST
9	CZECHOSLOVAKIAN CONTEST
29/30	CQ WW DX CW CONTEST

December/January:
6 December to 11 January 1981
ROSS HULL MEMORIAL CONTEST (VHF ONLY)

* Rules for these contests from VK2SG or VK2EG QTHR SASE PSE. ■

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VK6 — Mr. P. J. Savage VK6NCP.
Mr. B. Hedland-Thomas VK6OO.
VK7 — Mr. R. K. Emmett VK7KK.

YOU and DX

G. (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155

Australians, or more specifically VKs, are an apathetic group of individuals, one might almost say that we are just plain lazy.

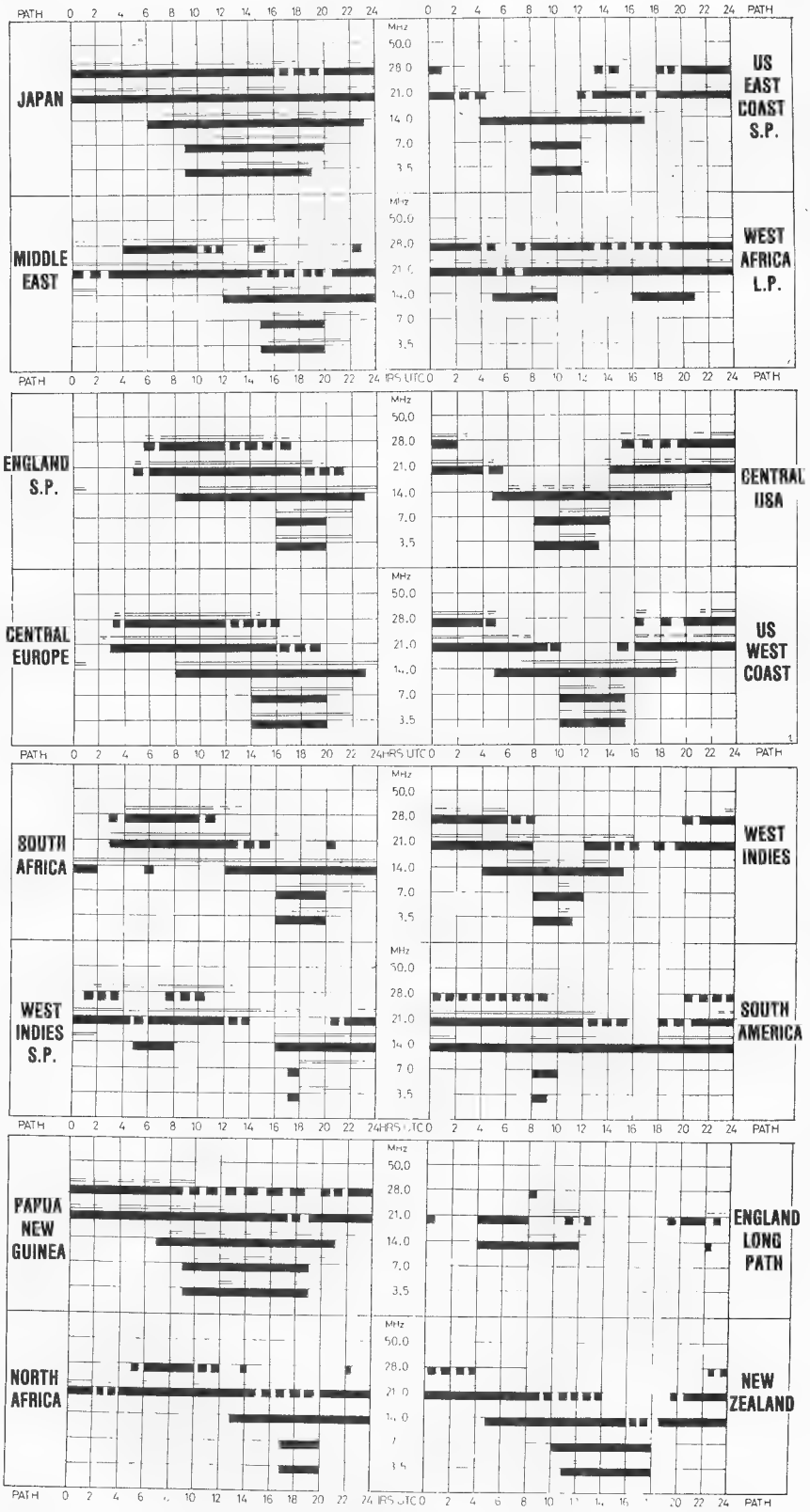
Home-brewing is a forgotten art, even antennas, the key element of any station, are being bought in enormous quantities "off the shelf"! Perhaps we are too affluent but does that mean the same lazy, don't give a damn attitude should prevail in our operating techniques and manners whilst on air? Oh dear, perhaps I've offended you, raised a few hackles? Well you can always ignore me, turn the page, take the easy way out.

Still with me? Good! It's nice to see a few operators care. Spending the amount of time I do in listening to the bands reveals that many stations don't even bother to check whether a frequency is in use before commencing tranmission. By checking I mean carefully listening, then if nothing is heard, politely asking not once but twice to make sure. Such manners appears to be lacking in many many operators. I could of course cite numerous examples, for instance the VK calling CQ South America right on top of a Brazilian who was already in QSO with Australia, oh and on 20 metres (yes novices aren't the only ones by any means) the VK3 calling right slap bang on the same frequency as a very large net, including many VKs waiting their turn to work LU3ZY on South Sandwich Island; then to cap off that particular operation the considerate VK2 who, after successfully contacting that station, made the supreme physical effect of QSYing down **one kC** to have a rag chew with another local, linear still on line, with no possible consideration for the other stations awaiting their chance. Many required repeats of signal reports due to the heavy QRM.

I sound disgusted do I? You can be assured that I am, however that's not the end of it.

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

DXers are a competitive bunch (that's right, you say — have to be to be successful). Well that spirit of competition, coupled with brilliant tail-ending mentioned in a previous article, crashing over the top (well you're louder than the bloke the DX station is talking to), is fast earning us an unenviable reputation. We cannot even understand plain English — since when is 3 in call area 5 or 6 in 1 for that matter. I find it no surprise whatsoever that several DX stations have indicated that they won't work VK, they are sick of it — can you really blame them? (If you can't hear a station, you can't work him.—Ed.)

Enough said, I sincerely hope the situation improves but I have my doubts.

ON THE BANDS

10 METRES

Again unstable, the most reliable path being into the African continent, on phone FD8XY, 5Z4YV, TL8WH, 3B8ZV, AA6AA/3B8, KA6SB/3B8, HZ1HZ, CX7AAR, T3LA, 5H3FW, ZK1CF, and on Cw WA6AHF/KH8 being noteworthy.

15 METRES

Excellent conditions prevail both on long and short paths, OH0AM, PJ9EE, OA4AWD, FB8ZO, T2AAA, S8AAW, 6O0DX, ST2FF/ST0, ZB2GK, SV0AT and WB7RFE/Wake Island all appeared at good strength.

20 METRES

Rather unpredictable but as usual a solid DX band. On CW DJ8BO/HB0, AI3E/KX6, HV1D1 and DJ1US/ST3 were of interest, whilst on phone 9Z7CSJ (Trinidad, Scout Jamboree station), 8R1RBF, HK0EIM and LU3ZY were in demand.

40 METRES

Excellent activity for the month both on phone and CW. For the patient listener on phone 5Z4YV, HK1AMW, YV1BI, CE1CDQ, FR0FLO, XE1UF and HC1NK, we regulars, whilst on CW KV4CI, AH0A, FR7BP, HH2VP, VS6JR, NP4A, ST2FF/ST0 and DL2GG/YV5 all livened up the band.

80 METRES

For the novice, solid propagation into New Zealand, together with YJ8NRS, YJ8SE, OA4AWD and ZS6BNS, all on phone, helped brighten up the rag chew band. On CW HH2BP, KL7HBK, ST2FF/ST0, 4S7MX, AA6AA/3B8 and UQ2NK were available for the early riser.

160 METRES

No report this month.

QTHs YOU MAY HAVE MISSED

BV2B — via Tim Chen, PO Box 30547, Taipei, Taiwan
5H3FW — via DF4TA.
DJ1US/ST3 — via DF2RG.
HZ1HZ — via PO Box 1999, Jeddah, Saudi Arabia.
C5ACO — via W2TK.
KX6MY — via PO Box 1252, APO, San Francisco 96555.
HK0EIM — via PO Box 842, San Andre Island, Colombia.
T3LA — via W7OK.
6O0DX — via I2YAE.
C5ACC — via KB4GQ.
SV0AT — via AF4B.

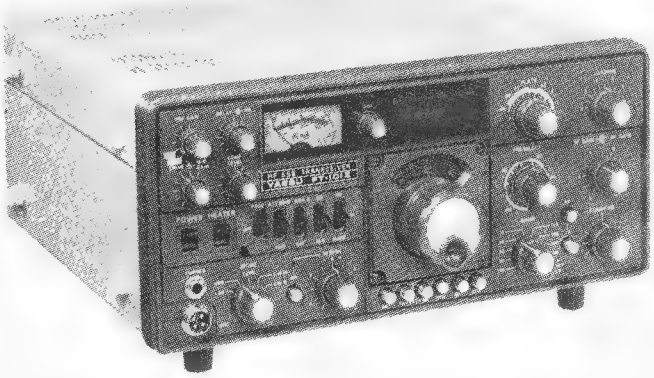
David N2KK/6 will be commencing an Indian Ocean jaunt taking in operations from the following countries. It is hoped some of the rarer African prefixes may also figure in this trip but lack of confirmation of reciprocal licensing unfortunately delays the release of this information.

Low bands will be concentrated on, particularly (3 695 and below) 80 (Phone and CW) and 160 (CW), but also 10 metres, particularly leaning toward VK novices.

15th October to 29th October — 4S7.
30th October to 22nd November — 8Q7.
23rd November to 2nd December — FR0.
3rd December to (period not decided) — J28.

December to unknown — Southern Sinai area thence to OD5.

Also for those Abu Ali hunters the news is good, a licence has been granted to K6LPL and J28AZ (Pierre) — call sign J20/AA to commence 5th December, 1980 — all bands. Good luck on this one; I'll be in the pile-up with you. ■



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Length: 30' (approx.)
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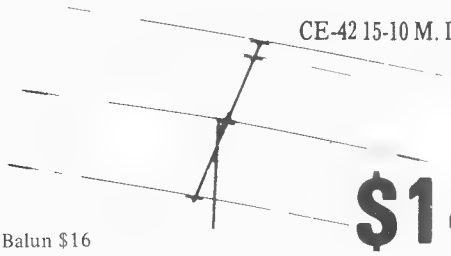

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HI-Q Balun $16

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3 elements on 15 M.
3 elements on 10 M.
Director and driven elements have hi-q traps.
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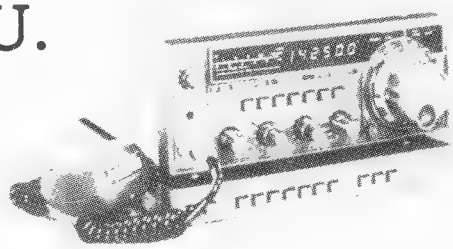
"Our price for the FT-707 is only around $700" (so why pay more elsewhere?).

YAESU.



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YP-150. Dummy load/Watt meter . . . . . .
FF-50DX. Low pass filter. 2kw . . . . . .
QTR-24D. Deluxe 24hr. World clock. . . . . .
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LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

The Editor,
Dear Sir,

I wish to bring the following matter to the attention of your executive as I feel a complete violation of the principles of amateur radio has been committed and will continue to be so for the remainder of this week.

Radio station YJ8IND commemorating the nationhood of Vunuatu (New Hebrides) is very active and will be using this call sign till just after independance. The station is being manned by amateurs from YJ8 and I congratulate them on their attempt to promote the ultimate goal of any group of people — nationhood in their own right.

Whilst mobile in Newcastle I was delighted to exchange reports with YJ8IND operator Ken on 21.195 MHz at 0110Z on the 28th July, 1980, then to work the same station on 28.524 MHz at 0205Z the same day. This time the operator signed as Paul.

However the crunch came when after making initial contact on 15 metres I asked if QSLs could be exchanged via the Bureau and was promptly told the following:—

"Sorry but no Bureau on this one. Direct QSL only and you must send 4 IRCs or 1 DB (I presume he meant a dollar bill). No card otherwise."

During the further contact on 10 metres I asked that operator if there was a QSL Bureau on the New Hebrides. This he confirmed but promptly informed me "No money, no card, so forget the Bureau".

This as I see the matter is a complete violation of a basic fundamental of amateur radio DX — the use of the QSL Bureau if one is available. This station is using a specially issued call sign, operated by YJ8 amateurs whose voices would be familiar to many VKs and I presume have the "official blessing" of the authorities.

I regard the demanding of money over amateur radio and the encouraging of international operators to break their countries currency restrictions as deploable. I can only assume this station will not make any exceptions to their stated demands and send any cards via Box 88, Moscow — Hi!

I lodge my strongest possible protest with you concerning the current activities in the New Hebrides (Vunuatu) and you may feel free to publish this letter in "Amateur Radio" if you wish.

Philip Greentree VK2VUQ. ■

(How far do amateurs turn a blind eye to contributing towards the costs of DXpeditions and special stations? And how much is a QSL card worth? Do we all set up shop to see how much we can get for our cards, assuming of course we are not allowed to charge for our own time taken in writing them out? Most operators would probably be satisfied with 2 IRCs to cover postages on QSLs mailed direct, and perhaps 4 IRCs for airmail on direct QSLs. The organiser of station YJ8IND, C/0 Box 39, Port Vila, was told this letter would be published and was asked if he would like any of his own comments to be added. No reply came. —Ed.) ■

11 Brett Avenue, Mt. Isa 4825

The Editor,
Dear Sir,

I wish to publicly thank those who assisted me during the past 1980 Remembrance Day Contest. In particular I would like to say that without the help of VK6NBX, who kept my log for me and also kept me awake with the worst jokes I've ever heard (just ask him about the elephant near my pool).

Also I would like to thank those operators who went out of their way to try and cause interference. They did this by dropping tones on my operating frequency VFOing over the frequency, general QSOing on the frequency and sending recorded voices on my operating frequency. All this happened in the closing hours of the contest, around 0500Z.

There were a number of operators listening on the frequency who beamed on to the interfering stations, and we do know which State it was coming from, so once again I thank those stations for the interference, it only stirred me on to continue as I was just about to end my transmissions.

See you all again in the 1981 "Friendly" contest.

73. R. Egan VK4NOD. ■

8 Dexter Drive, Salisbury East, SA 5109
25th August, 1980

The Editor,
Dear Sir,

From time to time, due to the nature of the duties performed by Alex VK5CCT, he has the opportunity of an overnight stay on Cocos-Keeling Island. This location is of course as you know still a rather rare and sought after one for DX chasers.

On such occasions Alex has always been prepared by ensuring that he has equipment with him and has also been most obliging **by giving up his night's sleep** just to provide as many contacts from that location as he can. Operation has been mostly confined to the 20 metre band due to lack of time for erection of antennas, setting up of the station, etc., however we would also like to overcome this problem if we can. We do have ideas of using a multi-band vertical to attempt operation on other bands in the future. Paul, now VK3CGR, also has operated from Cocos in the past as VK9CGR, and Alex has been operating under the call sign of VK9CCT/portable VK9Y. In view of the difficulties of explaining the use of the Australian "C" call series to many of the DX stations, with obvious attendant language problems in some cases, and to simplify things to a large degree the QSL information has been to QSL via VK5QX, which is my call sign.

I do wish though to explain for the benefit of all interested our QSL policy.

Firstly, we are amateur radio operators and are definitely not in the business of trying to make anything out of any of these operations from a financial point of view.

Secondly, we do not in any way ask for payment from anybody for the privilege of receiving a QSL card.

We are extremely critical of this abovementioned practice, and also very much against the practice of "bulk mailing" of return QSLs for those operators who have sent with their card sufficient to cover return postage in the normally accepted manner. We have been upset to hear that such practices exist and indeed feel ashamed that this sort of thing can happen with Australian operators involved. Again I can only say that we strongly condemn any of this type of practice.

Many operators do enclose with their card an American one dollar note, and this is quite acceptable. (Often referred to as a "green stamp".) You would also be quite surprised just where some of these come from too, quite often from European stations, etc. Other operators enclose International Reply Coupons and yet others somehow have affixed to their self-addressed envelope an unused Australian stamp. All these methods suit us quite well.

Some operators send nothing at all, whilst others such as a certain VK station are most generous of their own free will. This particular operator referred to not only sent a stamped self-addressed envelope but included with it two dollars worth of Australian stamps, "Just to help out".

We also fully understand the problems of amateurs from some countries who have access to neither dollar bills, International Reply Coupons, etc. Many of these have enclosed a varied selection of stamps of their own country, which is a nice thought. Alex has a number of times even sent a few IRCs back to these stations so as to help them out in future.

Allow me to just explain another couple of matters.

A one dollar American note here in VK exchanges to about 80 cents. It costs 55 cents Australian to post a card back airmail. This then leaves a balance of 25 cents Australian.

The cost of the printing of the QSL cards also has to be covered and as some stations do not include a self-addressed envelope a stock of these has to be kept on hand.

So you can therefore see that we definitely are not in this for anything other than the fun of amateur radio and the pleasure of so many more people being able to make a rare contact.

We are trying to make arrangements in the case of stations from the USA for a scheme utilising a "Stateside QSL" manager. This would allow operators in that country, and there are many who have made contacts, to obtain their QSL for the cost of just one internal return postage. Here again though we will have to sort out the problem of log information and the printing of cards. This I feel will not be too difficult to achieve.

For stations who send their cards via the QSL Bureau the reply card is returned in the same manner. In each case this costs 4 cents per card from this end and I have sitting on my shelf a batch of 250 cards and a 10 dollar note to cover their cost, which I will be handing to our QSL Bureau Manager tomorrow evening (all VK9CCT).

So that, I think, will pretty well explain the story to you. We do not know of any criticism of our QSL policy to date, however in the light of some of the things which have happened in this sphere of amateur radio in the past and which are apparently still going on, we wished to let everyone know that at least we are, as we say it in Australia, "fair dinkum". Our policy is a one hundred per cent QSL policy in every way possible with no frills or additions.

Before I close I would like to thank all those operators who have assisted in any way during these Cocos-Keeling operations which by virtue of circumstances must be mounted at both short notice and certainly under some very difficult conditions for the boys who operate from there at such times as are possible. We hope that we can keep these operations going, as many more stations still remain to be satisfied with a VK9Y contact. We are also hopeful of having more operators in the near future who will be able to come on from there on an opportunity basis.

Last of all I would like to thank all of those USA stations who were most helpful during Alex's recent trip by both standing by, providing advice, refraining from QRM, etc., which allowed him to achieve his Worked All States from Cocos-Keeling. All we have to do now is to get them all confirmed. HI.

73. Ian J. Hunt VK5QX,
also on behalf of Alex VK5CCT and Paul VK3CGR.

PS: Incidentally, need I also mention the amount of work involved in making out all the QSL cards after up to 600 contacts made in less than 10 hours of operation from the island during the one night? So for those still waiting, please be patient if you can! ■

The Editor,
Dear Sir,

May I comment further on the VK/ZL Contest scene.

First, let me re-state the nitty-gritty of what any contest should attempt to do. **By means of sensible rules and attractive awards, it should provide enticement for maximum participation.** Do the present rules and rewards of the VK/ZL meet these criteria? Partly yes — but, in my view, it's time for another look at them.

The coming 1980 VK/ZL, sponsored this year by NZART, has five clear sections. This is good, as far as it goes, but there is room for more sections, even if they don't induce a big activity first up. What is needed is an SSB and CW section for the novice licensee. The rules make no special provision for the novice, so if he wishes to compete he must do so in the open section and under the handicap of low power, inexperience and band and frequency limitations. This is not the way to attract maximum participation. The VK novice is a fast growing influence and deserves recognition in our one big national event. It is true that there is a yearly VK novice stir, but it is not a DX contest as such — yet.

The decision of the VK Contest Committee to include an eight (2) hour section is to be applauded and it induced enough participation to justify its continuance. Many cannot devote a whole day and night to AR for various reasons, e.g. many OTs are past a non-stop 24 or 48 hour "go", while others have commitments for part of the weekend — and so on.

Contest Committees, VK or ZL, could also look at the suggestion of creating an added section for YLs. By their nature, the "gals" dont' compete as overly aggressively as the males and might be enticed to come on more if they had a separate classification. A little more encouragement in the form of a special section might swell the ranks.

Until a multi-op. classification is added to the already existing sections, it cannot be known if this type of operation would be popular. Some thought should be given to this, especially as the pundits predict increased multi-op. activity in the future.

SWLs

It is good to see the section allowing this group to participate has been re-introduced in the 1980 rules. They were debarred from the 1979 test. The main gripe about SWLs is that their QSLs, in the modern scene, have little value; this, of course, is a half-truth. However, in my view, they should be encouraged to become a greater part of the scene, for one very good reason, viz., they are a much bigger group than most realise and, although the percentage may not be great, many eventually become Hams. Still, participation in any activity is usually a two-way stretch. Times have changed and SWLs, in their turn, should be looking to producing a more attractive QSL with something of value written on it. Many I receive would entice no one to respond.

Needless to say, if the VK/ZL Contest is to have more sections it is also going to need to issue more awards, diplomas, etc. "Wall paper" alone, as a display memento, isn't good enough. Something more enticing needs to be offered, in the form of plaques, pennants, medallions, etc. This is not a criticism of what has been awarded in the past: it is now 1980 and time the prizes were updated. Everyone now expects higher rewards. The day of the one-design certificate issued for all categories of prizes should be past. Providing top class trophies for several sections is costly and most contest committees don't have such funds at their disposal. The answer lies in sponsors; there is a long list of them offering attractive rewards in the ARRL and CQ Contests, etc., so why can't the same be done for the VK/ZL! We may not be Big League — but neither are we "small time".

Neil Penfold VK6NE took the courageous and progressive step of accepting summary sheets only, in lieu of logs. The result was, as I thought it would be, when some of these sheets were checked against their corresponding logs, they showed mistakes, irregularities and maybe even cheating. One must take a realistic view of this situation — Hams, by and large, are just as prone to "mistakes" as any other group or society. However, there is no need for the summary sheet idea to be discarded. If it is plainly and clearly written into the rules that the winning logs — and any other that the Contest Committee deems necessary — will be called in for close perusal, and that errors of over 3 per cent can render any log invalid, then any inclination to submit sloppy logs or cheat will be neutralized.

The prefixes VK or ZL are commonplace really and not likely to entice overseas DXers to fire up their rigs, just to knock us off ad infinitum. Larger overseas participation could be expected and more logs submitted if DX to DX working was permitted, with an added bonus for working VK/ZLs; say, 2 points for DX to DX and 5 points for DX to VK/ZL. Many other countries run their contests in this manner and the ARRL, always conservative, has just introduced it with marked success.

The requirement in the rules to exchange a two or three digit number, increasing by one fo reach QSO, i.e. 01 or 001, together with the report, is a sore point with some. They feel a fixed two digit is more in keeping with the modern scene. It is not by chance that contests in which a fixed two digit is used are very popular. Those who would retain the status quo and persist with the sequential numbering defend its use by saying it provides an added test of competency. This is true; but in my view the modern contest is tough enough without it. Now the QSO rate is faster — so much so, logs cannot be hand written and computers are needed to help cope. Mistakes inevitably occur with the old method, whereas the two digit is mistake free. I advocate a trial of the fixed digit swap; but if not let us at least stick with Jock White's ideas of allowing any competitor to commence with any number between 1 and 100. This way no one knows exactly how the other fellow is doing, which is the way it should be if maximum participation is to be maintained.

It seems to me that activity in our VK/ZL, both local and overseas, is not what it should be. By creating more sections, offering more and better prizes and re-writing part of the rules, it may be possible to get to that nitty-gritty and almost double the number of logs submitted. If you have any positive suggestions on the above, write to your Contest Committee.

Alan Shawsmith VK4SS. ■

PO Box 53, Bairnsdale 3875
20th July 1980

The Editor,
Dear Sir,

Never having written a letter to the Editor before, I am prompted to do so by a letter in July AR from Jack Mellor VK3AMG, re limited tenure of novices.

It is obvious, without knowing the gentleman personally, that he is either involved in electronics as an occupation, or is retired, with plenty of time on his hands. I think we should all place things in perspective. In other words, first things first. For me, my family comes first, then my job, which by the way is far removed from electronics, and then my hobby. I obtained my novice call after the November 1979 exams, and will in due course try to obtain a full call. But why should I be forced to neglect my first two priorities for that of my hobby? Not everybody is an electronics genius, and I'm not ashamed to admit that it took me two attempts to pass that "hard" novice exam, but I don't think I'm any worse an operator for it. So what if a novice wants to remain one forever. We don't exactly have large portions of the band, and I suggest that if Mr. Mellor feels we are degenerating too far, he has only to tune a little further up the dial.

It may be worth remembering that the recent large influx of novices has without a doubt saved our hobby and the WIA from destruction within a few years due to lack of numbers.

I probably won't make AOCP within two years, but if my fellow amateurs would like me off the bands, perhaps I have chosen the wrong hobby, from which I obtain much pleasure.

Yours sincerely,
Peter S. Phillips VK3VPC. ■

Crescent Head, NSW 2440.
11-6-80.

The Editor,
Dear Sir,

There seem to be two distinct groups of people feverishly insisting on popularising amateur radio. One is well intentioned and the other is ill intentioned.

The well intentioned want as many as possible to share their hobby, which they themselves find so enjoyable. That is very laudable, but they must pause to reflect that they are eagerly inviting others to share something which, only in part, belongs to them. By all means let them share their own possessions, but not those of the many who desire to preserve the individuality of the hobby and who do not want it invaded by a host of newcomers who have been "talked into" it; who were not attracted to it by a consuming inner urge; and who cannot find the way without finger posts and enthusiastic "missionaries" prodding them mercilessly.

The early amateurs were attracted to amateur radio by an urge within themselves and they needed no outside persuasion. They needed assistance then, but never persuasion. As a consequence, they value their hobby and behave with restraint, decorum and circumspection.

There are many old established amateurs who are convinced that the "service" has been degraded by the **artificially stimulated** influx, because many of the newcomers haven't any concept of the deeper meaning of amateur radio. To them it is only a means to exchange inanities.

There was once a well established and well observed protocol . . . for example: one did not break into a conversation without a very good reason and especially when one of the stations was not readable to the breaker!! There was once a willingness to accept a friendly hint to turn down the gain a little, without responding by inviting the adviser to visit a taxidermist!!

With regard to the ill intentioned, they are mostly motivated by the desire to become very wealthy, very quickly. It is perfectly legal to sell transceivers to all and sundry; that it is quite unmoral and unprincipled is of no consequence to these people. For a very few of these latter it may be a desire to undermine and utterly destroy amateur radio as we know it.

To sum up: Let us case this "missionary" work and allow people to gravitate into the hobby of their own volition and let these abundant "missionary" energies be directed towards persuading the Governments, Federal and State, to legislate against the sale of equipment to other than appropriately licensed persons and maybe, with lots of luck, we will preserve a most enjoyable and a most dignified hobby.

R. G. P. Andrews VK2ARN. ■

51 Meeks Crescent, Faulconbridge 2776
18/4/80.

The Editor,
Dear Sir,

At the head of page 7 of the April issue of AR, under the heading of "New Bands", mention is made of two VK2 agenda items. I would support the first agenda item to have the new bands authorised for use as soon as possible, but the second proposal to limit their use to a select band of elite amateurs who have "higher" qualifications to my mind is a selfish proposal which should be opposed by all full call members before we end up with more grades and band segments than the Americans. To cite the fact that the new bands are so narrow, therefore higher operating requirements are necessary, is an insult to anyone who has passed the AOCP exam, particularly the essay version. It implies that we already have a problem with out-of-band operators who either do not know how to calibrate their transceivers or wilfully break the regulation. If this is the case, and I have no evidence that it is, then those culprits or incompetents should not be allowed to operate on any bands, not further restrictions placed on those who do not offend or in the proposer's estimation might offend.

To also suggest that a higher CW qualification or RTTY exam be discussed in connection with those band segments' usage is ludicrous. It matters not what the mode of transmission is as long as the transceiver is stable, calibrated and tuned correctly; again if the amateur does not know how to do this properly then he should not have an amateur licence. The ssumption that if a person can receive CW in excess of 20 w.p.m. or type RTTY, that should qualify him for extra privileges is wrong, as just about any private citizen can be trained to do that in a few weeks.

As there are no popular commercial amateur band transceivers as yet available for these new bands, this would be an incentive to all those true amateurs who are willing to experiment, as opposed to the communicator appliance operator "amateur" who admits over the air his unwillingness to open his black box's case, let alone put a soldering iron near its insides. Those last home truths should make all of us realise that one standard should suffice for all operating privileges of full call operators without placing restrictions on other people's rights by regulation or "higher" standards. If you are good enough to operate on 1.8 MHz (60 kHz band width) then you should be proficient enough to operate on 10 MHz or any other band for that matter, or give the game away.

N. Chivers VK2YO. ■

AMATEUR RADIO ACTION

is the NEW GENERATION amateur magazine.

- ★ Comprehensive DX notes
- ★ Propagation forecasts
- ★ Very technical - and not so Technical articles
- ★ Useful projects

Here are just a few of the articles which have appeared in recent months

- ★ Fixed wire beams
- ★ Case for UHF beacons
- ★ 80W linear for 6m
- ★ Wilson System Three review
- ★ Spratly DX exclusive
- ★ Backyarders good or bad?
- ★ ATV Special
- ★ SWL notes

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AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

Here are details of two Australian awards which are available to members of 10/10 International contacts on the 10 metre band only. All applicants for these awards must possess a current 10/10 number and this may be obtained by working the required number of existing 10/10 members on the 10 metre band. Full calls require contacts with 10 different stations, novice calls require contacts with 5 stations. Send log details only, including the name, address and 10/10 number of the stations worked to Mr. Art Hart VK2BXN, PO Box M514, Central Mail Exchange, NSW 2012, with a fee of $4 for full calls or $3 for novice calls. Applicants will then receive a certificate with their unique 10/10 number stated thereon. Then you may proceed to chase contacts on the 10 metre band for the followings awards:—

WELCOME STRANGER AWARD

This award is available from the "Welcome Stranger" ten-ten chapter located in Ballarat, Victoria. Ballarat was a tiny hamlet, nestling in primeval forest, when gold was discovered there in 1851. Within a few years Ballarat had become the richest of Victoria's goldfields. Thousands of miners of all nationalities flocked to the "diggings", which soon covered 800 square miles of alluvial claims. Gold was mined by the pound

Second or Endorsement Award of Welcome Stranger, earned when 50 points have been attained.

During this period the miners rebelled against a repressive colonial authority, and Ballarat became the scene of the only pitched battle ever fought on Australian soil — the "Eureka Stockade" — when miners fought the police and army in a bloody battle.

It was during this period also that the world's largest nugget was found not far from here. The name given to the nugget was "The Welcome Stranger" that we take the name of the Chapter. We feel that the name expresses all that is best in Amateur Radio — "Welcome Stranger"!

Net time and frequency: 0000 GMT, Sunday (Aust.), 28.530 MHz.

BASIC AWARD
The Welcome Stranger certificate requires 10 points, which may be earned by working members on ten metres. The cost is $2 airmailed. Award credit value is 1 point.

GOLD CITY AWARD
50 points required, but any station may be worked twice, and the points totalled, provided that contacts are 24 hours apart. Cost is $1 plus one IRC airmailed. The award credit value is 1 point.

CENTURY STRIKE AWARD
100 points required; conditions are the same as for the Gold City Award. Cost is $1 plus one IRC airmailed. Award credit value is 2 points.

VIP AWARD
250 points required; conditions as above; must include 5 Charter Members. The cost is $2 plus one IRC. Worth 2 points.

VALUES
Charter Members are worth 3 points, Committee Members are worth 4 points. First State, DX and Honorary Members are worth 2 points. Charter Members are worth an additional point. Charter Membership may be granted to any amateur on payment of $2, and is worth an extra point. Charter Members are limited to ONE per country, and ONE per each Australian State, except in exceptional circumstances.

NOTE
A Three Aces award will be automatically granted to any member who achieves three first States on award and endorsements. All members of Welcome Stranger must possess a ten-ten number and be licensed radio amateurs.

CHAPTER HEAD
Leo McPherson VK3ADT, PO Box 247, Ballarat East 3350, Victoria, Australia.

BASIC AWARDS MANAGER
Geoff Smith VK3NLZ, 829 Laurie Street, Mt. Pleasant 3350, Victoria, Australia.

ENDORSEMENTS AWARDS MANAGER
("Gold City", etc.)
Harry Hekkema VK3NLH, 29 Cromwell Street, Sebastopol 3350, Victoria, Australia.

DESCRIPTION
This award measures 300 mm x 245 mm and the two endorsement certificates measure 175 mm x 120 mm. All are printed in two colours on high quality matt finish paper with lettering in black.

CITY OF MELBOURNE AWARD

CHAPTER REQUIREMENTS

BASIC
15 points, including 1C or 2HM or 2HC.

FIRST ENDORSEMENT
100 points, including 2C and 2FS.

SECOND ENDORSEMENT
250 points, including 3C and 5FS.

VIP
500 points, including 5C and 10FS.

Certificates will be awarded to members of 10/10 International who complete the Chapter requirements.

First Country will be awarded to the first correct application received from each Country per WIA Countries List, except Australia.

First State will be awarded to each Australian State and Territory, to each USA State, to each Candian Province, to each numerical call 0-9 in England and Japan, and 0-4 in New Zealand.

Honorary Members will be appointed to assist in propagating this award.

Honorary Charters will be awarded as decided by the Charter Members from time to time.

Two Honorary Members or two Honorary Charters may be substituted fo one Charter on the basic certificate only.

Any HM, HC, FC, FS may act as FS for first, second plus VIP Award. When working for endorsement, FS must be an Basic Certificate. Fs on first, second or VIP do not count towards awards.

Locals are deemed to be those within the greater Melbourne are and are designated "L".

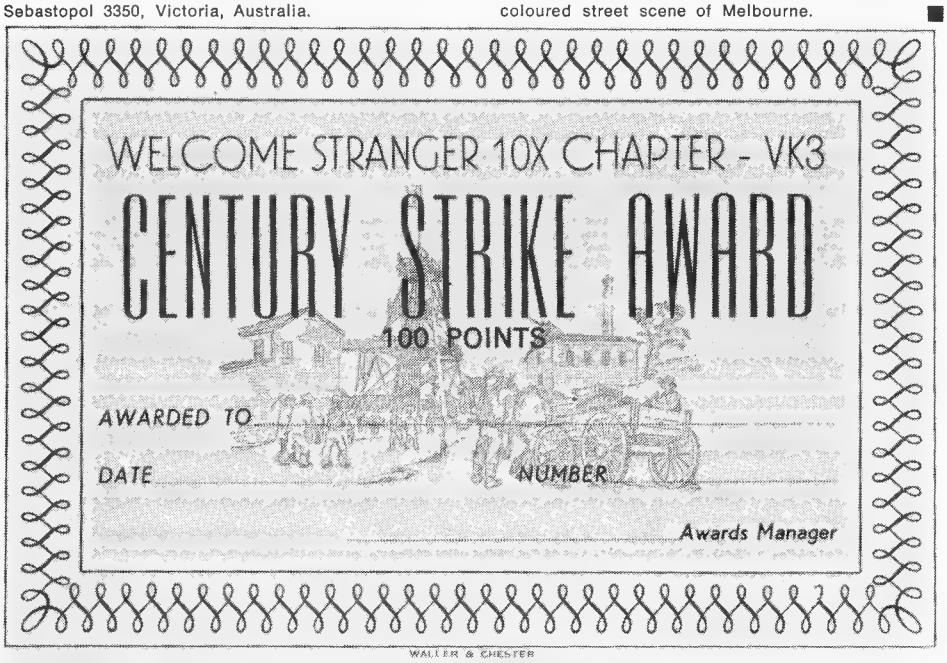
POINTS VALUES
Charters, 5 points; Honorary Members, 5 points; Honorary Charters, 4 points; First Country, 4 points; First State, 3 points; Local, 2 points; Others, 1 point; each endorsement, 2 points; FC plus FS on endorsements, 3 points.

All endorsements are Certificates. Cost of each is $3 airmail return.

Net frequency: 28.580. Time: Friday 2330Z, Saturday 0930 local.

All correspondence to be addressed to: The Manager, Box 242, Sunshine 3020, Victoria, Australia.

DESCRIPTION
The award measures 225 mm x 295 mm printed on gloss finish white card. The award features a multi-coloured street scene of Melbourne. ■



WALLER & CHESTER
PRINTERS BALLARAT

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. J. G. PRATT	VK2BPC
Mr. R. B. ALFORD	L20743
Mr. H. E. QUILTY	VK2AHQ
Mr. L. N. SCHULTZ, M.B.E.	VK2ANM
Mr. R. B. ALFORD	L20743

OBITUARY

Mr. H. E. (TED) QUILTY VK2AHQ

It is with deep regret we record the passing of Ted Quilty, aged 66 years.

Ted will be particularly remembered by the older Hams, having obtained his licence in the mid-1930s. He was a very keen and efficient CW man, being employed as a telegraphist in the Sydney GPO.

Holding a 1st Class Certificate, he transferred to DCA in 1939, taking up duty as Air Radio Operator at the Rose Bay radio station, operating the Sydney end of the Trans-Tasman Flying Boat Service.

After three years he returned to the Sydney GPO and later the Engineering Branch. He was a keen member of the Waverley Bowling Club. Two years ago he replaced his "home brew" rig with modern equipment, plus a substantial tower and beam.

He was hospitalised twice in the last 12 months with cardiac problems and passed away on the 3rd August in the Prince Henry Hospital following a severe heart attack.

Deepest sympathy is extended to his wife Doreen and her family.

Bill Bullivant VK2BC. ■

BOOK REVIEW

AMATEUR RADIO AWARDS
By The Radio Society of Great Britain.

This book is a dictionary of awards available to Amateurs and Short Wave Listeners from thirty-nine countries or societies throughout the world. The book does not intend to be a comprehensive listing of every award, but nonetheless contains information on most popular of the national society awards available to radio enthusiasits today, including one or two others.

The first edition was released in 1973 and this, the second edition, carries updated information and new material in its 80 pages. Each country's major awards are listed with details on rules and requirements and in some cases reproductions of the award discussed.

For those needing a refresher in geography this book contains excellent small scale maps depicting call areas throughout the world, together with an updated call sign listing and zone locations for the avid DXer.

Overall this book is a must for the serious award hunter and a useful general reference tool for those engaged in other facets of amateur radio but who may "get the bug" at a later stage.

Available from WIA divisions (on order) or your favourite book shop.

VK3NOY. ■

GIVE AN AR ADVERTISER YOUR SUPPORT

TECHNICAL CORRESPONDENCE

56 Sherwin Avenue, Castle Hill
16-8-80

The Editor,
Dear Sir,

Re modification of SSB 27 MHz PLL Tcvr for 10m operation.

VK4AR's excellent article tells of one method popular today, however experience has found that 5 kHz channelling is not always possible using the method described. For some reason the majority of PLL02A chips produce an 8.5 kHz reference frequency when pulled to deck. Only PLL02AG chips can be relied upon to give 5 kHz stepping used this method.

An alternative and much more practical conversion involves taking a standard Cybernet CB, replacing the 10.24 MHz xtal (X2) with a 5.12 MHz xtal and this will make Channel 1 28.240 MHz.

After re-aligning and replacing the channel selector with the 9 switch, switch box described in VK4AR's article, the radio will now operate quite happily from 28.240 MHz to about 28.600 MHz, with reasonable output, in 5 kHz steps.

Further, a simple modification can allow operation through **all** frequencies in this range. Simply remove R23, R24 and D5; bridge D4; pick up voltage from squelch pot VR2 and bridge through a 10k 1W wire-wound resistor to unused terminal of clarifier pot VR3.

The clarifier now alters both Tx and Rx frequency about 7 kHz (about 2.5 kHz down and 4.5 kHz up from centre frequency).

By using combination of switches and clarifier all frequencies in the popular phone section of 10m band can be obtained.

Neil Cornish VK2NBA. ■

AROUND THE TRADE

Amateurs Paradise, the well known Queensland retailer specialising in amateur gear, has moved to larger premises in the heart of Southport on the Gold Coast. The new address is Shop 5, 144 Scarborough Street, Southport (opposite the Del Plaza Hotel), and the telephone remains unchanged at (075) 32 2644.

Interstate and foreign visitors have always been most welcome to drop in for a chat and view the comprehensive range of all the major manufacturers equipment and accessories.

VICOM INSTALLS COMPUTER SYSTEM

Melbourne based Vicom International Pty. Limited has recently installed a Honeywell computer system to cope with the rapid increase of business currently being experienced.

The Managing Director, Russell Kelly, believes the inhouse system will greatly improve customer service and enable the company to keep track of thousands of spare parts and products.

"Our sales have increased so much lately that it was impossible to keep up with the paper work."

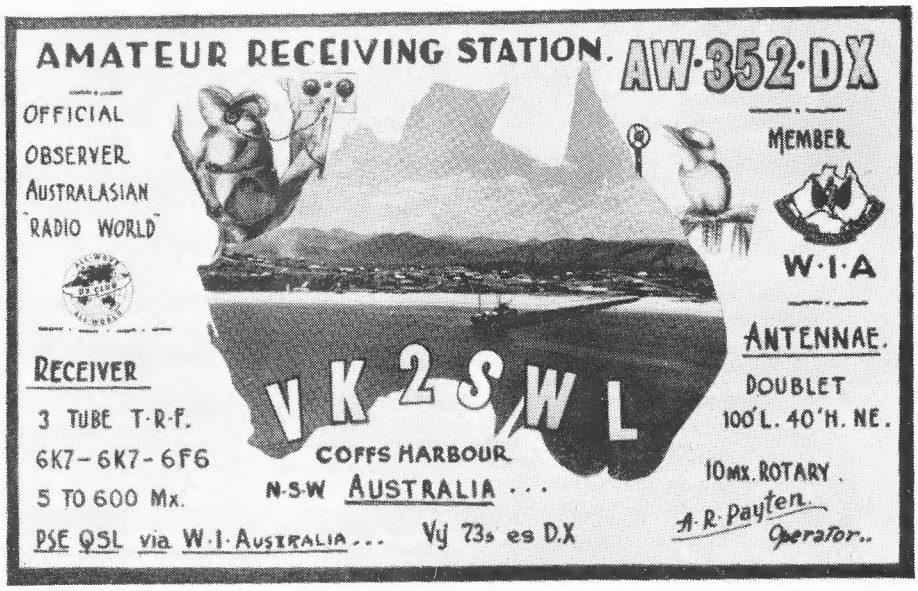
Vicom have installed a Honeywell Level 6 computer with a number of terminals and screens and operates a real time system to handle inventory and all accounting functions. The company has branch offices in Sydney and also in New Zealand.

As well as being in the amateur radio market, Vicom is also heavily involved in professional, commercial and governmental communications accessories. ■

TEN-TEC NEW RELEASE

The Scalar Group are now sole Australian distributors for the products of Ten-Tec Incorporated

Perhaps the best known Ten-Tec transceiver is their QRP rig, the "Argonaut".



QSP

LISTENER'S QSL

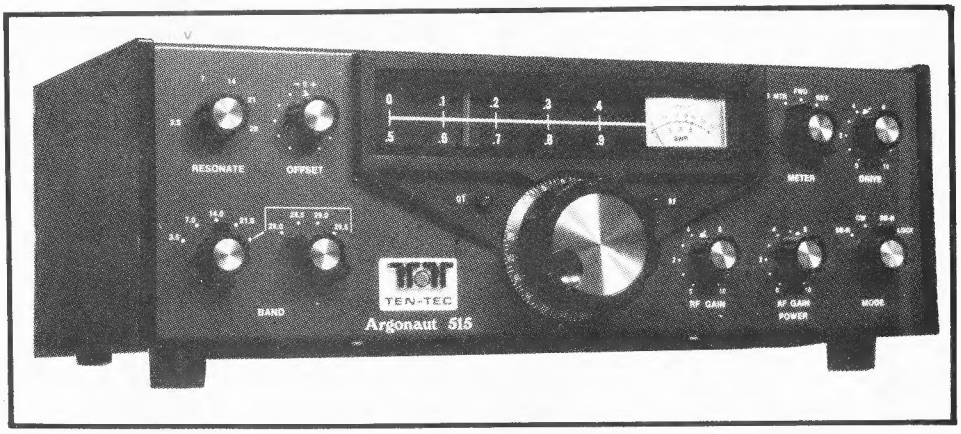
Published below is an old listener's QSL card which was handed to me by a local resident. I am not aware whether Mr. Payten is still alive, however you can see the amount of work involved in this particular card. He is obviously a keen or was a supporter of the WIA and I thought that the information might be worth publication and of interest to our members.

The wharf still exists but there are many many other improvements in the area with a growth in the area which is greater than many other small towns.

J. Brinkman VK2IS, 61 Gundagai Street, Coffs Harbour, NSW. ■

6W8

"6W8AR will be again on 28320 MHz every Sunday 0830-0930 GMT (after the P29 net) **from October 1980 to July 1981.** QSL manager for **6W8AR** is **WB4LFM.**"



The new "Argonaut-515", pictured here, is an improved version and should be very popular with novices and the QRP enthusiast alike.

The updated "Argonaut" includes the following:—

- Full band coverage 3.5, 7, 14, 21 and 28 MHz.
- Improved receiver sensitivity, 0.35 uV for 10 dB S + N/N. max.
- Four pole 9 MHz crystal filter, 2.4 kHz bandwidth, 1.7 shape factor.
- WWV receive at 10 and 15 MHz.
- New LED RF output indicator flashes on 2-watt voice peaks.
- PTT.
- Adjustable side tone level and pitch.
- Built in SWR bridge/S meter.
- Full line of matching.

The "Argonaut" features a no-tune broad-band final amplifier for instant band change, instant operation with 5 watts input and 2 watts output, including LED RF indicator.

The finals are unconditionally guaranteed for 12 months and have a pro rata warranty for five years.

Ten-Tec equipment is available from Scalar offices in Melbourne, Sydney, Brisbane and Perth. ■

ADDITIONAL STAFF JOIN VICOM

Vicom, in their programme of expansion, have added several more prominent staff members to their team. Stephen Porch has joined Vicom Sydney office and is well versed in amateur radio and commercial communications products.

Ian McFarlane VK3AQQ has joined the Melbourne head office as Group Accountant. In addition, Mr. Neil Lambert (ZLTJO) has been appointed as Managing Director of Vicom's New Zealand operation. ■

SYZYGY

A phenomenon where all the planets of the solar system come into alignment or "conjunction". This occurs about once in every 180 years and the next is due about 1982 to 1984. Not much is known about the last Syzygy in 1797-1806 according to the article in Worldradio News of March '80 but some exceptional tides, volcanic eruptions and tidal waves apparently. Of interest to amateurs is an expected effect on radio propagation, apart from environmental effects (if any) possibly arising from gravitational forces which could affect the sun in respect of solar flares, sunspots and magnetic storms. By the way, pronounce the word like sizz (as in sizzle) i (as in in) and gy (as in ge-ometry or the hard "g" as preferred). ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means address is correct as set out in the WIA 1979 Call Book.

FOR SALE

4 Element 10m Beam with gamma match, hardly used, excellent condition, $50. Werner VK3BWW. Ph. (03) 366 7042.

Challenger CIP Computer with 8K ram, extensive programme library, as new, $400. VK4ST. Ph. (071) 91 1172.

FTDX401, in excel. cond., with Foster mic., Katsumi MC701 speech compressor, spare matched pair of 6KD6s, 2 new 7360 and several other spare tube, hand book, $450; CDR rotator with control box, 110V transformer and some control cable, ideal for small beam, $80. VK3GI. Ph. (054) 27 2576, Woodend, to arrange viewing of equipment if necessary.

Galaxy V HF 5-band Txcvr., SSB/CW, 300W PEP input, separate power supply, perfect working order, full servime manual and circuit diagrams, spare valves, including finals, compact and powerful shack or mobile rig, size 6 in. x 10¼ in. x 11¼ in, $350. VK3BPT, QTHR. Ph. (03) 758 6445.

Icom IC701 with power supply and mic., absolutely as new, in original cartons, $1000. N. Stilwell VK3ACN. Ph. (054) 42 1288 Bus., (054) 43 7592 AH.

Sell or Swap variety vintage (1920s) component parts, mostly B/C, also WW2 era octal valves. SAE for list to VK4SS, 35 Whynot Street, West End, Brisbane 4101.

FRG-7, in mint cond., has two 2.4 kC filters for SSB, one 6 kC filter for AM, fine tuning, slow motion tuning, extra dial light, $250. A. Harrison, Nilma. Ph. (056) 23 2450.

Yaesu FT-901DM AC/DC All-mode Txcvr., with all options fitted, incl. AM and CW filters, plus bug for Curtis keyer and aerial matching unit, orig. carton, only tested due failed full morse, $1400, ONO; new Kenwood TR2400 plus charger, $250, ONO. VK2ZQH/VAW, QTHR. Ph. (02) 498 7867.

Diawa CN620 SWR Bridge, IC22S, IC701 w/AC supply, TR2400 hand-held w/stand B1 base, Philips FM320, 432 MHz transceiver, Mirage B108 linear 144 MHz, several yagis for 20, 6 and 2m. VK3ADR, QTHR. Ph. (03) 240 1231 Bus., (03) 509 8637 AH.

Icom IC-22S, exc. cond., 3 mths. old, 147.630 MHz channel installed, $260. Frank VK3ZO around 6.30 p.m. Ph. (03) 478 5972.

Complete Novice Station: Yaesu FT201S and P/S, $650; Kenwood MC50, $40; Daiwa CN620, $80; 35 ft. tower and emotator 103LBX rotator, $230; 15m 3 el., $70; 10m 3 el., $50; al coax and cable included; will sell complete for $1000 or separate as above. G. Haywood VK3VFK. Ph. (051) 52 3137 Bus., (051) 52 3753 AH.

Very Large (350 cm x 21 cm), very old glass accumulator jars and lids, Edison brand, collector's item, or use for pickled onions. Further details from VK6NPW, 23 Waddell Road, Palmyro, WA 6157.

Kenwood TS520S Txcvr., with MC10 mic., novice power mod., done professionally, diagram supplied for simple change back to standard specs., this unit is like new in appearance and performance, $550, ONO. Max Cutbill VK2NVO. Ph. (02) 621 5135 Doonside.

Beam TH3JNR, and KR400 rotator, both new and still in boxes, with balun, $350, ONO. Peter VK2NVA, QTHR. Ph. (02) 909 1130.

KLM UHF Linear, 10 watts in 70 watts out, solid state, covers entire 70 cm band, ideal all modes, incl. ATV, $300; microwave modules, 1296 MHz to 144 MHz converter, $50; microwave modules, 432 MHz to 1296 MHz varactor, $50; mounting hardware for 2C39, $12 per sent. VK3ZVJ, QTHR. Ph. (03) 478 8251.

Palomar TX100 Solid State Linear Amplifier, broadband 3-30 MHz, 200W PEP out from 12W PEP in, 100W out from 4W in, includes 10 dB gain RF preamplifier and RF relay switching, ideal with FT7, etc., ittle use, as new in carton, $195, ONO; SL-56 active audio filter, SSB and W, baidpass width variable to 14 Hz, 12 poles, plus 2 pole 60 dB notch filter, imported from USA and not now required, bargain at $55. VK3ARZ. Ph. (03) 90 7409.

Deceased Estate—Late VK2ADE: Kenwood TS820, VFO 820, $850; Kenwood TS520, VFO 520, $650; Swan 500, VFO 500, P/S, $500; Heathkit SB220, $500; Atlas 210X tcvr., SS, $400; Heathkit SB301, SB401, combined units, $600; Heathkit SB610 monitorscope, $100; Drake MN2000 ant. matching network, $150; Hy-Gain 6 el. Thunderbird antenna, 50 ft. crank-up, tilt-over tower, CDE ham M rotator, combined three units, $560; Ringo 2m antenna, $30; 4BTV vert. ant., $80; Hustler mobile whips 10, 15, 20, 40 and 80m (5), $60; D104 Astatic mic. and stand, $30; Heathkit Cantenna dummy load, $25; coax switches, $10 ea.; University multi-meter, MVA100, $30; FRG7 communication receiver, $350; plus large amount of spare parts, magazines, etc. Enquiries to John VK2ZPC, QTHR. Ph. (02) 95 5946 AH.

Home Base/Mobile Station: Heathkit SB101 tcvr., with updates to SB102, CW filter, two new 6146Bs in final, like new cond., Heathkit CB640 external VFO, Heathkit HP23A 240V P/S solid state, Heathkit 12V P/S for mobile, connecting cables and manuals, $550; TH6DXX Hy-Gain tri-band beam, completely refurbished, new boom section, new SS clamps and trap covers, small elements and traps assembled, alminoxed, taped and sealed, tested, beam to mast assembly, etc., $200. VK2DA, QTHR. Ph. (02) 94 1039.

Yaesu FT200 Txcvr., matching AC power supply, mic., good cond., $350; DX160 Rx, as new, in carton, $150. VK4JF, QTHR. Ph. (074) 72 1461, Kingaroy.

Txcvr., Icom IC701/IC701PS/MIC ICSM2, as new. Bill VK3YHT, QTHR. Ph. (052) 21 2162 Bus., (052) 78 8272 AH.

Yaesu FTDX400 Txcvr with Yaesu matching spkr., 80 through 10m ,receiver preamp fitted for 10m, plus cooling fan for finals, c/w mic and hand book, plus 240-220V AC transformer, $250. VK3NHW, QTHR. Ph. (03) 728 4023.

Anbody want to buy a good HF Transceiver? Drake TR4C, 300W, in good cond., noise blanker fitted, with 12V DC as well as 240V AC power supplies, mic and speaker, set of 3 matched finals (6JB6A) and 12BY7A driver, instruction manual, what offers? Alf Chandler VK3LC, QTHR. Ph. (03) 99 5344.

Hidaka Vertical Trap Antenna, 20 through to 80m, $60; 2 AR7 receivers, one is modified complete, other is original with power supply, has all coil boxes plus spares and a large range of spare valves to suit. Ph. (03) 439 9632.

Swan 500C Txcvr with P/S, in good cond., $350; AWA BS50 base station, going on 52.525 MHz, best offer; AWA BS50 base station, going on 146.0 MHz, best offer. Enquiries to Central Coast Amateur Radio Club, PO Box 238, Gosford 2250, or Ray Wells VK2BVO. Ph. (043) 92 2244.

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BWD CRO 509B 7 meg, as new. Wanted Pye Cambridge AM or FM low band transcevers. John Ruston VK5ARK, Renmark, SA. Ph. (085) 86 6127.

Lafayette HA800B, 80m through 6m, amateur Rx, $40; sideband SC502 10 metre rig, with battery and power leads, $40; 80m to 11m transverter, $40; no reasonable offer refused. Steve Porter VK4NBY, QTHR. Ph. (07) 52 0171, ext. 282 Bus.

TS820S, with manual, MC50 desk mic., SP820 spkr., the lot $800, ONO. Rolf VK3AOF, QTHR. Ph. (03) 366 3478.

Yaesu FT101E, AC-DC, speech processor, cooling fan, spare final and driver tubes, comprehensive maintenance hand book, plastic cover, very little use, absolutely as new, original packing, $675; KW107 Supermatch, HF combined aerial tuning unit, SWR meter and dummy load, as new, $125; Yaesu desk mic., YD-844, unused, $40; Yaesu radio frequency filter, new cond., $20; Hy-Gain TH3MK3 HF 3 el. beam, unused, $200; Hy-Gain balun for beam, $15; Standard C146A 2m transceiver, heavy duty charger, whip aerial, extension mic., 6 channel, very little use, as new, $150. VK3BFB, QTHR. Ph. (03) 93 1638.

Yaesu 2m xtal-locked FT2FB with power supply, immaculate cond., never been portable and hardly used due to my lengthy overseas secondments over last 3 years, 3 simplex frequencies, 3 repeater frequencies, $125. Roth Jones VK3BG. Ph. (03) 870 3333, ext. 18 Bus., (03) 848 7945 AH.

Yaesu FL110, HF linear amplifier, $200, ONO; will trade for 20A 13.8 V power supply; also TS120S Txcvr, $600. Gus Napier VK1NBO, QTHR. Ph. (062) 82 1457 AH.

Kenwood TS700A 2m Txcvr, all mode, with VOX-3 VOX unit, $575, ONO; ICOM IC202E with IC20L 10W linear, $250 ONO. Lionel VK3NM. Ph. (03) 568 2733 Bus., (03) 88 3710 AH.

Frequency Counter, Dick Smith, to 200 MHz, as new, hardly used, $90. VK3UV, QTHR. Ph. (03) 90 6424 AH.

WANTED

Require construction details for transverter, 28 MHz to 3.5 MHz, Dick Smith type now out of production, would appreciate this or similar type. John VK4NRQ, 100 Wrigley Street, Maroochydore, Qld. 4558. Ph. (071) 43 3023.

Computer Programme for Apple II 32K, basic ham radio log book listing, editing and search for listing. Please contact Rex Shepherd VK2VVI, PO Box 22, Woonona 2517 or Ph. (042) 83 1040.

Triband Beam, TA32 DX32 TA33, state cond., age, price, etc., all replies answered. VK6PY, QTHR. Ph. (09) 271 7192.

Information/Advice on conversion of Pye "Overland" (F25) to 2m, all letters answered. VK1NCW, QTHR, or R. Jenkins, 88 Companion Cres., Flynn, ACT.

MEL (Mullard) Equipment Control Unit L348/02, alternatively panel sockets or equipment with panel sockets, types 22-14S, 18-11S, 18-11SX, 18-11SW, 22-23P (one of each). P. Hadgraft VK4APD, 17 Paxton St., Holland Park, Q. 4121. Ph. (07) 397 3751 AH.

Medium Size Tri-band Antenna, swop brand new AT180 for AT200, also 30 yds. of 12 way cable for similar length of 6 way cable. Maurie Batt, Rokewood Junction, Victoria 3351. Ph. (053) 42 2245.

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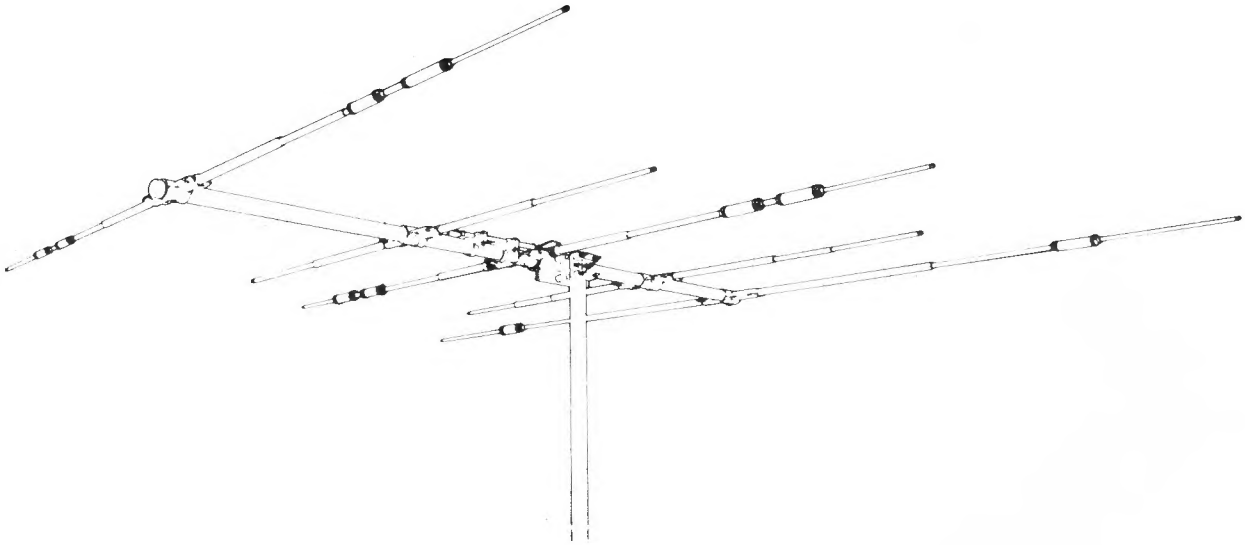
10-15-20 METERS



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Boom length	18 feet
Longest Element	31 feet
Turning Radius	18 feet
Surface Area	6.4 sq. feet
Wind load	164 lbs
Weight	50 lbs
VSWR at resonance	less than 1.5:1
Power Input	Maximum Legal
Input Impedance	50 ohms
−3dB Beamwidth	66° average
Lightning Protection	DC ground
Forward Gain	8.5dB
Front-to-Back Ratio	25 dB

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